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The Economic Record

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THE AUSTRALIAN ECONOMY, SEPTEMBER 1960

During 1959-60 the population increased by 219,520 to 10,280,742, an increase of 2·18 per cent. Natural increase provided 140,402 of the increase and net migration, 79,118. This rapid rate of growth in the population and the expectation that it would continue were dominant features of the Australian economy and played a major part in maintaining a high rate of economic development. Boom conditions, indeed, appeared over a large part of the economy, shortages of skilled labour and of basic materials arose and earnings and prices rose sharply. Speculation in land and shares developed. Over the year as a whole balance of payments "equilibrium" was maintained, though strong warning signs appeared in the latter part of the year. In the first three months of 1960-61 these conditions continued but the deterioration in the balance of payments position became more obvious. There were, moreover, signs by the end of September that the share market boom was petering out.

1. *The Budget*

The Federal Treasurer, Mr. Holt, brought down the Commonwealth Budget for 1960-61 on August 16. He increased personal income taxation by 5 per cent and company taxation by 6d. in the £, making the latter rate 8/- in the £. These increases are expected to provide in 1960-61 £36·6m. out of expected increases in taxation and other receipts of £177·7m.

Table I sets out the main features of the budget, the most important of which is the increase in the Consolidated Revenue Fund surplus from £29·4m. in 1959-60 to an estimated £125·7m. in 1960-61, an increase of £96·3m. Revenue is expected to rise by £177·7m., or 12·4 per cent, and expenditure only by £81·3m. or 5·8 per cent. The increased surplus has substantial deflationary implications. The picture is modified a little, by an increase of £52·0m. in the deficit on Transactions outside Consolidated Revenue Fund. There is an increase in expected expenditure on State Works and Housing of £10m., but the most important item is a fall, due to weakness of the loan market, of £40m. in estimated revenue from loan raisings. As loan raisings come largely from the surplus funds of institutions and individuals as well as from overseas borowings and bear much less heavily on expenditure than taxation the expansionary significance of this fall is probably relatively slight. The overall estimated cash surplus of £15·5m. representing an improvement of £44·4m. compared with 1956-60 appears to be less

TABLE I

The Budget 1960-61

(£m)

EXPENDITURE

	1959–60	*Estimate 1960–61*	*Estimated Increase 1960–61*
Consolidated Revenue Fund	1402·4	1483·8	81·3
Transactions outside C.R.F.—			
State Works and Housing	220·0	230·0	10·0
War Service Land Settlement	6·9	2·7	—4·2
Redemptions	77·4	80·0	2·6
	304·4	312·7	8·4
TOTAL	1706·8	1796·5	89·7

REVENUE

	1959–60	*Estimate 1960–61*	*Estimated Increase 1960–61*
Consolidated Revnue Fund	1431·8	1609·5	177·7
Transactions outside C.R.F.—			
Loan Raisings	189·8	150·0	—39·8
Sinking Fund Increase	53·4	52·5	—0·9
Other Balances	2·8	—	—2·8
	246·0	202·5	—43·6
TOTAL	1677.9	1812·0	134·1

SURPLUS

	1959–60	*Estimate 1960–61*	*Estimated Increase 1960–61*
Consolidated Revenue Fund	29·4	125·7	96·3
Transactions outside C.R.F.	—58·3	—110·2	—52·0
CASH SURPLUS	—28·9	15·5	44·4

Source: Based on material from the Commonwealth Treasurer's *Budget Speech 1960–61.*

significant than the Consolidated Revenue Fund improvement of £96·3m.

An interesting aspect of the Budget was the apparent care the Treasurer took not to dramatize it in any way. It was the actual cash surplus that was high-lighted rather than the more relevant C.R.F. surplus and change from the previous year. The 5 per cent increase in personal income taxation was put forward as withdrawal of a rebate granted the previous year. Subsequent events suggest that the Treasurer might have been wise had he used the Budget to administer more

of a psychological shock, for its immediate impact was slight and the boom continued. Even when all allowance is made for the manner in which the Budget was presented, the calmness with which it was received contrasts so strongly with the unrestrained criticism of the Fadden Budget of 1951, which was similar in principle, that it seems reasonable to suppose that some measure of public acceptance of anti-inflationary fiscal policies has now been achieved. Mr. Holt has not had to display anything like the political courage of his predecessor and it might be easier in future to keep the economy on an even keel.

2. *Wages and prices*

Table II shows some of the more important movements of wages and prices.

TABLE II

Wage and price indices

Percentage increases on previous quarter

	Minimum weekly wage rates, adult males	*Av. weekly earnings per employed male unit* (Seasonally adjusted)	*Consumer Price Index* (Six Caps.)
June 1959	2·6	1·5	0·4
September 1959	0·6	3·0	0·4
December 1959	2·9	0·8	0·6
March 1960	1·2	3·8	0·8
June 1960	0·5	2·1	1·8

Sources: Reserve Bank of Australia, *Statistical Bulletin*; Commonwealth Bureau of Census and Statistics, *Digest of Current Economic Statistics*.

It will be seen that the rises in wages and prices discussed by Professor Bowen[1] continued in the June quarter. There were, however, important differences between the movements of the three series. The rate of increase in award wages showed a tailing off which continued markedly in the June quarter. The rate of increase in earnings lagged a quarter behind that in award wages but was considerably greater than the latter in 1960. Retail prices, as measured by the new Consumer Price Index, rose fairly slowly at first but by the June quarter were rising at an increasingly rapid rate. It may be noted that the new Consumer Price Index shows much smaller price rises than the Interim Price Index used by Professor Bowen. In the new index the regimen has been expanded to include: (a) costs of home ownership, (b) weekly payments for houses let by State Housing authorities, (c) household appliances, (d) private motoring, (e) beer and other additional items.[2]

1. Ian Bowen, "The Australian Economy, July 1960", *Economic Record*, August 1960.

2. Commonwealth Bureau of Census and Statistics, *Consumer Price Index* (12/8/60).

The new index also has an improved method of construction.[3] Wholesale prices also rose by 8 per cent over the year, 6 per cent in the June quarter, while the Reserve Bank's Import Price Index rose by less than 1 per cent over the year.[4]

The rate of increase in minimum award wages should remain fairly slight in 1960-61, at least until the 1961 basic wage case, though to the extent that prices rise, the adjustment of the basic wage to retail price increases in some states will produce some upward movement. The rate of increase in earnings, lagging as it does behind award wage increases, should also fall. The high level of effective demand up to the time of writing (early October) and the associated labour shortage, are likely, however, to retard the fall in rate of increase in the early part of 1960-61. Later in 1960-61, as the Budget and other measures (to be discussed below) aimed at reducing demand become effective, overtime and incentive earnings are likely to fall; a fall in the absolute level of earnings is highly probable. The high rate of increase in earnings in the last half of 1959-60, together with the maintenance of a high level of effective demand in the first quarter of 1960-61, will probably result in further substantial price increases early in 1960-61, though the rate of increase should diminish sharply in 1961 as pressure on demand and on earnings becomes effective. In 1959-60 earnings rose by 9·8 per cent and prices by only 3·7 per cent. A narrowing of the disparity between these rates of increase should reinforce the downward pressure on effective demand likely to arise from budgetary, monetary and import policies; in this way a further check to earnings and price increases may be brought about.

The checking of excess demand by government policy is unlikely to be able by itself to solve the problem of maintaining price stability under full employment—unless these policies are carried far enough to result in an unacceptable amount of unemployment and loss of production. But the development of fiscal and monetary techniques, and greater public acceptance of them, should enable governments gradually to play a more adroit part. One proposal being canvassed at present is that more might be done to control monopoly and so help keep prices down. The Commonwealth Government is indeed vaguely committed to steps in this direction and some State governments are actively interested. No doubt there is much of value to be attempted here, particularly in compulsory provision of very full information about business opera-

3. The Commonwealth Statistician is to publish later in the year a bulletin dealing with the question of linking the Consumer Price Index with other retail price indices. It is worth mentioning here, however. that though the Consumer Price Index is undoubtedly a better guide to retail price movements since 1950, to which year it has been carried back, this does not destroy the value of the "C" Series index for comparisons over a longer period. This issue was involved when the relaxation of rent control in Victoria helped to produce a large rise in the latter index in the June quarter. This abnormal movement over a short period was a reflection of the extent to which the "C" Series index, because of the importance of rent controlled housing in its regimen, had for years been understating the rise in the cost of housing and to that extent in prices generally; it represents a partial catching up of the index with the actual rise in prices.

4. Reserve Bank of Australia, *Statistical Bulletin*.

tions and practices, in the supervision of price and market-sharing agreements and restrictions on entry, and perhaps also through price-control of a very limited group of standardized commodities and services. Too much should not be expected, however. In a developing economy all proposals for control of monopoly tend to run up against the basic difficulty that in such an economy profit and even monopoly profit are the baits we offer to encourage enterprise and acceptance of the risks of large capital investment.[5] A rapidly developing private enterprise economy must to a large extent be a business man's world, with trade unions, assisted by full employment, keeping up as best they may.

Arbitration tribunals can also probably do little, directly, except in the very short run, to solve the problem of price stability. If they raise wages as profits increase price inflation ensues, and if they refuse to do so the market tends to take wage-determination out of their hands.

TABLE III

	Consumer Price Index Six Caps. (1952-53 = 100)	*Comm. Basic Wage* Six Caps. (Nov. 1952 = 231/-)	*Real Basic Wage* (1952-53 = 100)	*Minimum weekly wage rates* (1952-53 = 100)	*Real minimum weekly wage rates* (1952-53 = 100)	*Average weekly earnings* (1952-53 = 100)	*Real earnings* (1952-53 = 100)
June quarter 1960	121·1	276/-	98·7	128	106	145	120
% Increase	21·1%	19·5%	—1·3%	28%	6%	45%	20%

Sources: Reserve Bank of Australia, *Statistical Bulletin;* C.B.C.S., *Digest of Current Economic Statistics, Monthly Review of Business Statistics.*

Table III, for example, shows that since 1952-53, in a period of unparalleled economic prosperity, Commonwealth arbitration tribunals have pursued a fairly cautious policy. The real Basic Wage has actually fallen, while real minimum award wages have risen by a mere 6 per cent, notwithstanding substantial increases in margins in 1954 and 1959. Over the same period, real earnings have risen by as much as 20 per cent. Earnings of £22/12/- in the June quarter included: Basic Wage, about £13/18/-; margins and over-award payments including extra earnings under incentive systems, about £7/0/6; and overtime, about £1/13/6.[6] The Commonwealth Statistician's figure for mini-

5. See J. A. Schumpeter, *Capitalism, Socialism, and Democracy* (Allen & Unwin, 1943), Ch. VIII.

6. The Dept. of Labour's *Survey of Overtime and Short Time Working in Larger Private Factories in Australia* shows that in June the average (arithmetic) overtime worked in the factories surveyed was 2·4 hours per employee. The figure of £1/13/6 is arrived at by assuming that the workers in this factory survey were typical of all workers in respect of overtime worked, also on the assumption of a minimum wage of £18/11/- (including margin £4/13/-) and overtime payment at time and a half.

mum weekly rates of wage[7] suggests an average margin of about £3/13/-, but this figure is known to take too little account of public service and other salaries. If one likes to guess one may add £1 to this, making the average margin, £4/13/-, and leaving an average over-award payment of £2/7/6. The rise in earnings referred to above no doubt consists partly of increased overtime, payment for which is directly related to arbitration awards, and the various types of over-award payments, which are often not related at all to awards. The above discussion suggests that over-award payments are significant and, indeed, probably the more important.[8] It is therefore reasonable to interpret the large rise in real earnings relatively to real minimum award wages as indicating that to a small but increasing extent wage-determination is being taken out of the hands of arbitration tribunals. The ability of the latter to determine wages in such a way as to maintain price stability thus appears to be extremely limited.

It seems likely that fundamental changes in the character of the arbitration system are now occurring. A major characteristic of this system has been its maintenance of relatively high wages and conditions for weaker groups of workers. The slow rise in real minimum award wages relatively to real earnings in recent years suggests that it is now either less willing or less able to pursue this approach; the race is now much more to the strong. The Department of Labour survey referred to above[9] showed that overtime is very unequally distributed among workers, 68·1 per cent of employees in the survey earning no overtime at all. There is no doubt that over-award payments are also very unequally distributed. Employees who work no overtime and earn no over-award payments are only very slightly better off than they were in 1952-53 and are relatively much worse off.[10] The Commonwealth Arbitration Court's abolition of "cost of living" adjustments in 1953 appears to be the decision mainly responsible for the changes that are occurring. A more basic factor, however, is the rapid rate of economic development which involves a strong profit incentive and which in association with full employment, has given rise to strong inflationary pressure. The largely unconscious re-orientation of approach of the arbitration system can be regarded as an attempt to meet the problem arising from this basic economic situation and this in turn has led to the development of more direct bargaining between employers and employees as the latter have sought to share in the gains from economic development. More egalitarian Government economic policies to assist those who lag behind would be useful under these conditions.

Though improvements could without doubt be effected in government and arbitration policies the above discussion suggests that, in our

7. C.B.C.S., *Monthly Review of Business Statistics.*

8. See also, A. S. Holmes, "The Australian Economy, February 1960", *The Economic Record,* April 1960, p. 180.

9. See footnote 6.

10. Where such employees receive low margins, have families and face a housing problem they must experience a great deal of hardship. They constitute a large group that is easily lost sight of in the prevailing prosperous conditions.

rapidly developing economy, to ask them by themselves to solve the problem of maintaining price-stability is to ask the impossible. More responsibility for maintaining price stability will therefore have to be undertaken by employers and trade unions themselves. This is difficult to achieve, for if some firms eschew price increases and reduce them when they are able and others do not, the result will be the familiar story of the unco-operative gaining at the expense of the more socially minded. Over a long period we might conceivably persuade very large firms to act as semi-public utilities and give a lead in this direction which could gradually spread downward to smaller firms. But the action of the Broken Hill Proprietary Company this year in increasing prices after the margins increase and later in the year declaring a large bonus issue suggests that even our largest firms are not very advanced in their thought at the moment. Nationalization might be a long-run solution in such a case, but it provides no general answer. Many of the firms making large profits are relatively small and not obvious candidates for nationalization, even if this were constitutionally possible. Similar difficulties exist on the trade union side. Eventually perhaps a way might be found for trade union leaders to reach agreement on wages and prices with employers and governments. At present, however, failure of trade unions to secure wage increases would simply result in a shift to profit. Moreover, union officials who pressed for wage increases would gain at the expense of those who did not, and the latter would probably soon be ousted from office.

The trend towards more direct bargaining over part of the wage, discussed above, suggests another possibility. Negotiations concerning over-award payments are at present largely informal and are frequently on an individual basis. If these could now be formalized a measure of round-table negotiation, consultation and give-and-take between employers and trade unions might be developed, and this could lead to significant improvements in industrial relations and hence in productivity. This would not only reduce the ratio of price to wage increases and so help to solve the price-stability problem, but would also lead to more rapidly rising real income all round and to increased job satisfaction. It is understandable that managements are reluctant to enter this (in Australia) largely unexplored field; increases in productivity depend so much on technical progress and improvements in organization that the possible gain from improved industrial relations seems less important by comparison. Moreover the problems involved are complex, and it is so much easier to seek a simple working solution with the aid of the industrial officer, the (usually relatively junior) personnel officer and the arbitration system. Trade unions, for their part, are slow to take account of the fact that their bargaining power can be increased as much by reducing the costs of agreement to the employer, e.g. by helping to increase productivity, as by imposing heavy costs of disagreement (e.g. by strikes).[11] It is unfortunate that

11. See Neil W. Chamberlain, *Collective Bargaining* (McGraw-Hill, 1951), Ch. X.

"absence of strikes" is the rather negative criterion mainly used for "good" industrial relations. Much research and experience shows that there is a good deal to be gained both by managements and trade unions from adoption of a more positive approach.[12]

3. *Employment*

Total civilian employment rose from 2,941m. in June 1959 to 3,040m. in June 1960, an increase of 3·4 per cent compared with an increase of only 1·8 per cent over the previous year—a further illustration of the high level of economic activity. The number of unfilled vacancies registered with the Commonwealth Employment Service increased from 20,000 in June 1959 to 31,700 in June 1960, while over the same period registered unemployed applicants fell from 65,700 to 47,200.[13] Buoyant conditions continued in July and August and by the end of August vacancies had risen by 6,100 to 37,800 while applicants had fallen by 7,300 to 39,900.

4. *Market supplies and expenditure*

Total market supplies rose from £7,277m. in 1958-59 to £7,987m. in 1959-60, an increase of £710m., or 9·8 per cent, compared with an increase of £431m. or 6·3 per cent over the previous year. Of the increase in 1959-60, 74·4 per cent came from a rise of £528m., or 8·4 per cent, in gross national product and 25·6 per cent from a rise of £182m., or 17·7 per cent in imports, etc. The importance of imports in 1959-60 is illustrated by the fact that by contrast, 97·7 per cent of the smaller increase in total market supplies in 1958-59 came from greater Gross National Product and only 2·3 per cent from greater imports.

Exports, etc., rose from £941m. in 1958-59 to £1,087m. in 1959-60, an increase of £146m. or 15·5 per cent compared with an increase of only £8m., or 0·9 per cent in the previous year. Deducting exports from total market expenditure leaves gross domestic expenditure of £6,900m., an increase of £564m., or 8·9 per cent over 1958-59. This compares with an increase of 7·2 per cent over the previous year. These movements may be compared with the rise of retail prices (Consumer Price Index) of 3·7 per cent in 1959-60 and 1·7 per cent in 1958-59 and an increase in the population of 2·2 per cent in each of these years. Table IV shows that in 1958-59 increased domestic expenditure of £423m. approximately matched increased G.N.P. of £421m. and increased imports of £10m. approximately balanced increased exports of £8m. In 1959-60, on the other hand, increased domestic expenditure of £564m. exceeded increased G.N.P. of £528m. by £36m., and was met by a corresponding excess of imports over exports.

12. See for example, *The Scanlon Plan*, ed. F. G. Lesieur (Wiley, 1958). This particular approach has the very distinguished support of Professor C. A. Myers and Professor Douglas McGregor of the Massachusetts Institute of Technology.

13. Reserve Bank, *Statistical Bulletin*.

TABLE IV

Market supplies and expenditure

		1958–59 Increase over 1957–58			*1959–60* Increase over 1958–59	
	£m.	£m.	%	£m.	£m.	%
Gross National Product	6250	421	7·2	6778	528	8·5
Add imports, etc.	1027	10	1·0	1209	182	17·7
Total market supplies ..	7277	431	6·3	7987	710	9·8
Less exports, etc.	941	8	0·9	1087	146	15·5
Gross domestic expenditure	6336	423	7·2	6900	564	8·9

Based on Commonwealth of Australia, *National Income and Expenditure 1959–60.*

The largest increase in gross domestic expenditure was that in personal consumption. It rose from £3,920m. in 1958-59 to £4,256m. in 1959-60, an increase of £336m. or 8.6 per cent, compared with an increase of 5 per cent in the previous year. Its proportion of gross domestic expenditure, 61·7 per cent, was about the same as in 1958-59, 61·9 per cent. The largest percentage increase was in gross private investment in fixed capital equipment, which increased from £1081m. to £1235m., an increase of £154m. or 14·2 per cent, compared with the increase of only 4·3 per cent the previous year. It was 17·9 per cent of gross domestic expenditure compared with 17·1 per cent the previous year. Public authority expenditure rose from £1147m., to £1256m., an increase of £109m. or 9·5 per cent compared with an increase of 8·6 per cent in 1958-59. Its share of gross domestic expenditure, 18·2 per cent, was about the same as in 1958-59, 18·1 per cent. Stocks increased by only £78m., compared with £123m. in the previous year.

Of gross private expenditure on fixed capital equipment (£1,235m.) building maintained its share of 37·2 per cent. The share of dwelling construction fell slightly; the share of other new building and construction rose slightly. The share of motor vehicles rose from 27·6 per cent of gross private expenditure on fixed capital equipment in 1958-59 to 29·1 per cent in 1959-60, while the share of other capital equipment fell from 35·2 per cent to 33·6 per cent. Table V shows the amount of expenditure in each case.

One may also attempt to classify gross private investment in fixed capital equipment according to whether it was for "industrial" or for "durable consumption" purposes. Let us rather arbitrarily treat as "durable consumption" half of station wagons, and of motor cars and cycles, and the whole of dwelling construction. The other "industrial" remainder—the other half of station wagons, motor cars and cycles, together with the whole of other new building and construction and of other capital equipment, amounted in 1959-60 to £833·5m. or 67·5 per cent of gross private investment in fixed capital equipment. Such "industrial" investment, together with investment in stocks, amounted to 13.2 per cent of gross domestic expenditure. This is not a

TABLE V

Gross domestic expenditure

(£m.)

	1958–59		*1959–60*	
Public authorities		1147		1256
Financial Enterprises	65		75	
Gross private investment—				
Fixed capital equipment:				
Dwelling construction	241		267	
Other new building and construction	162		193	
Trucks, utilities, etc.	85		91	
Station wagons	32		52	
Motor cars and cycles	181		217	
Other capital equipment	380		415	
	1081		1235	
Stocks	123	1204	78	1313
Personal consumption		3920		4256
Gross domestic expenditure		6336		6900

Source: Commonwealth of Australia, *National Income and Expenditure 1959–60.*

very spectacular figure when it is remembered that it relates to "gross" investment before depreciation is taken into account.

The increased level of economic activity shown by employment figures and by movements of market supplies and expenditure can also be illustrated by the increases in production of selected commodities, as shown in Table VI.

TABLE VI

Production of various commodities

	1958–59	1959–60	% Increase	July 1960	Aug. 1960
Houses and flats commenced (000)	81.7	91·3	11·8	25·5 (Aug. qtr.)	
Electricity production (mn. kWh.)	21,109	23,344	10·5	2,312	2,303
Ingot steel prod. (000 tons)	3,203	3,503	9·3	309	332
Cement prodn. (000 tons)	2,481	2,635	6·2	243	245
New motor cars and station wagons reg. (000)	176·3	224·1	27·1	20·4	22·5
New commercial vehicles reg. (000)	66·3	68·9	3·9	5·6	6·2
Tractors sold for agricultural purposes	16,342	18,397	12·6		
Television viewers' licences — new issues (000)	300	403·8	34·6	45·7	40·0
Wool received by brokers (cumulative from 1st July, 000 bales)	4,735	4,926	4·0	247	849

Source: Based on figures from C.B.C.S., *Digest of Current Economic Statistics.*

It will be seen also that such figures as are available for July and August 1960 show that the high level of production has continued into 1960-61. Another source of information is the A.N.Z. Bank Index of

Australian Factory Production which rose from 130 in May 1959 to 146 in May 1960, an increase of 12·3 per cent.[14] The National Bank of Australasia in its *Monthly Summary of Australian Conditions* reports a continued high level of industrial activity in August. At the time of writing (early October) private enquiries suggest that business activity and confidence remain high. The budget and other economic measures appear to have had little damping effect as yet.

5. *Money and banking*

The high level of activity during the year was facilitated by an increase in the volume of money of £258m., or 7·7 per cent. Notes and coins in the hands of the public rose by £18m. or 4·7 per cent. Bank deposits with cheque-paying banks rose by £107m. or 6·8 per cent, and with savings banks by £133m. or 9·6 per cent. There was also apparently an increase in the velocity of circulation. The Reserve Bank points out in its annual report[15] that the volume of money at June 1960 was much the same percentage of G.N.P. as for the previous two years, but that "debits to accounts of trading bank customers were on the average about 17 per cent higher than in the previous year. This rise was proportionately greater than the increase in trading bank deposits, an indication that the rate of turnover of this part of the money supply is increasing. This greater rise in bank debits than in gross national product arises mainly from the development of the financial structure and the diversification of non-bank financial institutions. It also reflects the increased turnover at rising prices of existing assets and claims, particularly land and shares."

Advances of major trading banks rose to £1015·0 m., an increase of £98·7m. or 10·8 per cent. Of this increase, £80·4m., or 81·5 per cent occurred in the last three months of the financial year. Among other important sources of the increased money supply were an increase in savings bank loans and advances of £40m., an increase in government debt of £51m., a government cash deficit of £29m., and a rise of £36m. in savings bank holdings of securities. One important offset to these was an increase of £26m. in the public's holding of Commonwealth Government securities.[16]

Professor Bowen has recounted the steps taken by the Reserve Bank up to February 1960 to tighten credit. The Statutory Reserve Deposit ratio has remained since then at 17·5 per cent. Statutory Reserve Deposit Accounts rose by £54·1m. over the year but, surprisingly, fell by £4·3m. over the last quarter. The increase over the year was equivalent to 45·6 per cent of the increase in the banks' deposits. The ratio of advances to deposits rose from 56·8 per cent in June 1959 to 58·6 per cent in June 1960. The liquid assets and government securities of major trading banks fell by £32·4m. over the year, the

14. See A.N.Z. Bank, *Quarterly Survey*.
15. Reserve Bank of Australia, *Report and Financial Statements 1960*. (To be referred to subsequently as "*Reserve Bank Report*".)
16. See *Reserve Bank Report*.

ratio to deposits falling from 22·3 per cent to 18·9 per cent. It is clear that the big increase in the banks' advances, combined with central bank pressure upon them, resulted in a substantial reduction in their liquidity over the year.

Advances of the major trading banks nevertheless rose by a further £45m. in July and by £6m. in August. Deposits fell by £25m. in July and by £4m. in August. The long upward movement in bank advances suggested that the banks had not co-operated as well as they might have done in central bank policy and that the latter's controls become effective rather too slowly. At any rate, early in August the Reserve Bank asked the banks to achieve an immediate and significant reduction in the rate of new lending; in particular it asked them to, "intensify their efforts to ensure that they are not providing finance directly or indirectly for speculative activities".[17] The August figures suggest that a halt has at last been achieved. And there is little doubt that some of the trading banks are having to borrow from the Reserve Bank in order to maintain their liquidity ratios.

Investment and speculation in shares and land were a feature of the year. The share price index of the Sydney Stock Exchange, which had already risen from an average of 210·94 in June 1958 to 252·77 in June 1959, rose further to 335·85 in June 1960. A peak of 348·46 was reached on September 16. Some reason for these developments was provided by buoyant business conditions and expectations both of continued economic development and (largely realized) of record profits with some bonuses and dividend increases. Finance came from development of overseas investment in Australian equities, equity investment by institutions, rises in wages, salaries and profits, an influx of new investors (often actuated by a desire to hedge against inflation), bank advances ,and the rise of new financial institutions. These both released new funds and made possible the more economical use of funds.[18] The lightheartedness with which the share market ignored the Budget and other anti-inflationary measures suggested that, at any rate from a short-run point of view, an incautious over-optimism had developed. Quite early in 1960, indeed, financial stringency cast its shadow before: there was a weakening of the market for rights to new issues which persisted and became greater as the year progressed. By the end of September some brokers were advising clients to become liquid in readiness for bargains should share prices fall. Because of growing financial tightness it seems probable that the September peak in the share index may not be reached again for some time.

The Reserve Bank's control of the supply of credit is weakened by the growth of the new financial institutions. The Reserve Bank Report gives most revealing figures on assets of various groups of financial institutions at June 1953 and at June 1958. Over this period trading banks increased their assets from £1548m. to £1791m., an increase of 15·7 per cent. Savings banks increased their assets from £1000m. to

17. *Sydney Morning Herald*, 8/8/60.
18. Two articles on non-banking financial institutions appear later in this issue.

£1358m., or 35·8 per cent. Life assurance offices, pension funds, hire purchase and other credit instalment companies, building societies, non-life insurance companies, unit trusts and investment companies, and friendly and health societies, together increased their assets from £1281m. to £2279m., an increase of 77·9 per cent. This growth in the importance of non-banking financial institutions has undoubtedly continued. As the Reserve Bank points out, "an increase in the range of activities of financial institutions is a natural accompaniment of economic growth and diversification". The growth of a more specialized money market has many advantages. The more recent development—since February 1959—of an official short-term money market, with the Reherve Bank providing lender-of-last-resort facilities has interesting possibilities.[19] Many of the new institutions are, however, outside the scope of the Commonwealth Government's banking powers, even though some engage in what can only be described as quasi-banking activities.[20] The financial resources available through these institutions and their freedom from the controls to which the trading banks are subject, by slowing up the impact of central bank control of the supply of credit, has probably diminished its effectiveness.

The interest rate policies of the Reserve Bank, which are believed to reflect Treasury policy, appear also to have diminished its control of the situation. Professor Bowen[21] has considered some of the issues involved, and it is only necessary here to bring the story up to date. In the latter part of the year, when the trading banks were selling securities in order to maintain their liquidity, the Reserve Bank purchased £30m. of securities,[22] presumably in order to hold the bond rate of interest. The Bank states that, "in its open market operations with the remainder of the economy the Bank was a substantial net seller of securities". But the Bank could have bought less or sold more, and tightened credit more, if the bond rate could have been allowed to rise. This would in turn have helped to check the later, more speculative phase of the land and share booms. It would also be easier at a later stage, if required, to allow the bond rate to fall and produce expansionary effects. The advantages of such flexibility seem more than to outweigh any disadvantages from possible further weakening of the loan market, with the consequent need to finance an even greater proportion of capital works from taxation. It must be remembered, moreover, that a policy which helps to check inflation tends, in itself, to strengthen the loan market.

The Comonwealth loan of £30m. which opened on September 7 did, in fact, offer very slightly higher short-term and medium-term rates, while keeping the long-term rate of 5 per cent unchanged. It closed over-subscribed. A large proportion of the subscriptions came, however, from the savings banks, directly through their statutory obligations to invest 70 per cent of their funds in government securities, and

19. *Reserve Bank Report.*
20. See *Sydney Morning Herald,* 23/9/60, "More Insolence from Lombardy".
21. I. Bowen, *loc. cit.,* p. 322.
22. *Reserve Bank Report,* p. 23.

indirectly through their loans to the short-term money market, which must invest at present only in government securities.[23] The success of this loan therefore does nothing to indicate the acceptability of the 5 per cent rate.

Trading bank advance and fixed deposits rates are also controlled; they have remained unchanged since 1956. In the official short-term money market, interest rates in June 1959 were 2·94 per cent for money at call and a maximum of 3·50 per cent for money for fixed periods; they fell by June 1960 to 2·75 per cent and 3·50 per cent. By the end of September, however, they had risen to 3·375 per cent and 4·50 per cent, another sign of the growing stringency. Hire purchase and finance companies are also raising their borrowing rates. For example, Lombard (Aust.) Ltd. recently raised its rate for money deposited at call from 3½ per cent to 4 per cent and its 6 months rate from 5 per cent to 7 per cent. Custom Credit Corporation recently raised its longer term borrowing rate from 7 per cent to 8 per cent. Offers of 10 per cent and more are not uncommon. There is still plenty of money to be had at a price, but the rise in uncontrolled interest rates shows that the central bank's tightening of credit is taking effect.

Apart from the limitations under which the Reserve Bank labours, too much is probably expected of the banking system. It is easier to restrict credit in time of boom if it has been possible to lend freely at other times, that is if there is more to restrict. Because of larger use of monetary as compared with fiscal policy in the regulation of economic activity the trading banks have had to exercise restraint when they should have been free to lend. They have seen much business that they might have done go to hire purchase companies and other financial institutions. This has reduced the scope for credit restriction when this is desirable and added greatly to the costs of many consumers. It would be an advantage if we could reduce the burden on the banking system by making more use of budget surpluses, varying from year to year, as a means of economic control.

6. *The balance of payments*

Table VII shows that a substantial increase in imports in 1959-60, together with a small increase in net invisibles, was largely covered by increased exports: the debit balance on current account increased only by £36m. This was more than compensated for by an increase of £41m. in the credit balance on capital account.

The balance of payments prospects for 1960-61 are much less reassuring. The Bureau of Agricultural Economics predicts a fall in exports of rural origin from £728·9m. to £641·2m., or by £87·7m.[24] Wool and sheepskins, which constituted 44·2 per cent of Australia's exports in 1959-60, are a major factor in such calculations. Wool exports are expected to fall from £409·4m. to £337·1m., or by £72·3m., accounting for nearly the whole of the fall in rural exports. Exports

23. See *Sydney Morning Herald*, 5/10/60, "Tighter and Tighter Money".
24. Bureau of Agricultural Economics, *Trends in Rural Production and Exports*, No. 15, September 1960.

TABLE VII

The balance of payments
(£m)

	1958–59	*1959–60*	*Increase on 1958–59*
Current Account—			
Exports	810	936	126
Imports	—796	—946	—150
Trade balance	14	— 10	— 24
Invisibles (net)	—221	—233	— 11
Current account balance	—207	—243	— 36
Capital Account—			
Official borrowing, etc. (net)	20	31	11
Private investment	97	}	}
Balancing item	81	} 208	} 30
Capital account balance	198	239	41
Movement in international reserves	—9	—4	5

Source: C.B.C.S., *The Australian Balance of Payments 1955–56 to 1959–60.*

of meats and dairy products are also expected to fall substantially. Such estimates are necessarily hazardous; the statistical position of wool suggests that wool prices could easily turn out to be appreciably higher than is now expected. Exports of metals seem unlikely to change very greatly. This is also the safest assumption to make for manufactured exports, which will depend to some extent on what happens to effective demand. For example, because of the high level of internal demand Australia has moved from being an exporter of steel in 1959-60 to being an importer in the early part of 1960-61, but the fall in effective demand likely to result from anti-inflationary measures should reverse such trends by 1961. The growth of industry should make available a larger export surplus. We may guess at a total fall in exports of about £70m., but this is perhaps over-pessimistic. Exports for the first quarter of 1960-61, at £198·4m., were only £0·7m. below the corresponding quarter last year. But there were extra wool sales this year.

Influenced by the Commonwealth Government's relaxation of import restrictions in 1959-60 and by the high level of effective demand, imports have continued at a high level. At £281·4m. for the first quarter of 1960-61 they exceeded first-quarter imports last year by £76·3m. If this trend continued imports would be up for the year by £300m. Imports in the first half of 1960 were, however, already at an extremely high level. The anti-inflationary measures are almost certain to bring them below this high level in 1961. Indeed, once stocking-up is completed, imports should fall well below recent peak levels. We might guess that imports will be up by £150m. in the first half of the year and down by £50m. in the second half, a net increase of £100m. Allowing for reduced exports of £70m. we have an expected unfavourable balance

of trade of £170m. The slight increase in trade, together with announced rises in freights on imports and exports, may raise net invisibles by about £15m. This gives an unfavourable balance on current account of £185m. A fall in profits would tend to reduce the unfavourable balance in so far as profits are earned by overseas companies. But in so far as these profits would not have been distributed, there would be a corresponding unfavourable movement on the capital account: in 1958-59 over 60 per cent of direct private overseas investment in Australia was undistributed profits. In any case, any fall in profits generally later in the year is likely to be balanced by the high profits being earned in the first half.

On the capital side the Treasurer's Budget speech clearly suggested some fall in official borrowing: this may be of the order of £15m. Private overseas investment should continue at a high level: investment plans are made well ahead and are not likely to be suddenly and drastically curtailed. Increasing British and United States interest in Australian equities should increase overseas portfolio investment. Many British investors are said to be waiting on the sidelines to take advantage of the expected fall in share prices next year. American investors, who because of the American capital gains tax are less influenced by such considerations, come in more as long-term investors. Much will depend, however, on the relative movements of equity prices in London, New York, and Australia. The movement of gold and balances held abroad by the Reserve Bank suggests that there might have been a slight decline in private overseas investment in the first three months of 1960-61. These fell by £74·6m.; compared with a rise of £8·9m. in the first quarter of last year; this was an adverse change of £83·5m. The trade deficit, however, was only £77·5m. worse than last year. Many other factors, particularly time-lags, may however have been at work. If we assume that for the year as a whole private overseas investment as a whole remains unchanged we are left with a fall of £15m. in the favourable balance on capital account. Added to the unfavourable balance of current account of £185, we have a total unfavourable balance of £200m. This will have to be met by an equivalent decline in Australia's international reserves, from £512m. at June 1960 to £312m. at June 1961. The fall in gold and balances held abroad referred to above does not seem inconsistent with such an estimate, if allowance is made for the likely improvement in the position later in the financial year.

The uncertainty of such estimates at this stage of the year must be recognized. Exports could easily be higher, imports later in the year lower and private overseas investment higher than has been suggested. At best, however, it is clear that there will be a substantial running down of our overseas reserves. This reduction in the volume of money will add greatly to the financial stringency imposed by the central bank and the Budget. There can be little doubt that effective demand will be severely checked in 1961.

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THE NEW ZEALAND ECONOMY 1959-60

It is now possible to announce more or less complete recovery from the sharp recession of 1957-58. And when it is remembered that the terms of trade swung adversely by some twenty points over the worst period, the limited internal dislocations which followed upon the tough Budget of 1958 and the severe import controls were not a heavy price to pay. It has turned out fortunately of course; the insulation provided by guaranteed dairy produce prices, import controls and fiscal severity will only take this full employment welfare state so far. After that, Micawber must help; and export prices did, as it happens, turn up.

And now, in September 1960, most of the main economic indicators have something favourable to say; a notable exception is the United Kingdom price of New Zealand dairy produce, which has just dropped another 10/- a cwt. to 280/-. As recently as January of this year the price of our butter in London stood at 410/- per cwt. In the meantime, however, New Zealand is in that happy economic world where recovery is established with stability, where the lions of higher farm incomes, higher money wages, high government expenditure and record house building are lying down with the lambs of fairly stable retail prices and growing overseas reserves. All this, I am afraid, does not mean the uniquely desirable balance of full employment, negotiated wage increases, terms of trade, fiscal policy, investment and propensity to consume which gives us Growth without Inflation. It does mean that economic cause and effect, stimulus and reaction, are lagged, and in a complex, and perhaps not well understood, manner. And it is likely that, when the aggregates have flowed on a little further, prices will rise, overseas liquid assets fall, and we will find ourselves yet again in a classically inflationary situation.

1. *Balance of payments and external trade*

With the current export season not quite fully written into the statistics, it nevertheless appears certain that receipts for merchandise exports have been running at record levels. This reflects greater supply as well as price recoveries. Indeed, the export price index for 1959 at 98 (1957 : 100) was lower than for any year of the 1953-59 period, except 1958. On present export price prospects, it should be affirmed that we are not likely to be swept along by an external boom. On the contrary, export receipts are stopping short of desirable levels, if one considers internal prices and pressures in relation to them.

The total picture, however, continues favourable. The overall surplus is better than it looks, as there has been no government borrowing during the year, and some repayment of loans together with provision for more. Over the last two years a current account surplus has been achieved, after a run of deficits going back to 1954.

TABLE I

New Zealand's overseas exchange transactions
(£N.Z. million)

*Current and Capital Accounts**	*Years ended 30th June* 1958	1959	1960
CURRENT ACCOUNT—			
1. Exports	256·6	290	321·1
2. Imports (c.i.f.)	303	238·8	249·6
3. Invisibles	−30·6	−38·4	−42
Balance of Current Transactions (Surplus +; Deficit −)	−77	+12·8	+29·5
CAPITAL ACCOUNT—			
1. Investment Account (Lending or Repayment −; Borrowing or Repatriation+):			
(a) Private Capital Transactions—			
(i) Long-term	+ 1·1	+ 6·2	+ 5·4
(ii) Short-term	+ 1·8	+ 1·2	+ 0·7
(b) Government Investment	+16·2	+21·7	−20·1
(c) Local Body Debt Repayment	− 0·8	− 0·8	− 0·6
(d) Other Capital Transactions, including Errors and Omissions	− 3·6	+ 8·2	+ 4·8
TOTAL—Investment Account	+13·7	+36·4	− 9·7
2. Net Overseas Assets (Increase −; Decrease +):			
(a) Reserve Bank—			
(i) Investments	+14·2	—	−12·8
(ii) Foreign Exchange Holdings	+30·7	−38·2	− 4·6
(b) Trading Banks	+18·4	−11	− 2·4
TOTAL—Net Overseas Assets	+63·3	−49·2	−19·8
NET CHANGE IN CAPITAL ACCOUNT (Outflow −; Inflow +)	+77·1	−12·8	−29·5

* Apart from Exports and Imports all categories show a net figure only —that is the residual between receipts and payments.

Source: Reserve Bank of New Zealand.

Of course, with import controls still operating, the surplus is factitious, even though the controls have been progressively eased. The Government Statistician has recently called attention to the rising level of costs falling upon New Zealand as a net importer of services. In the mid-fifties it was normally estimated that a surplus of exports over imports of around £40m.-£50m. was required to balance external payments. At present it appears that a figure of the order of £55m.-£60m. will have to be met, and a recent increase in overseas freight rates of 6 per cent may make this estimate conservative. This gap is formidable; it does not, however, as some advocates have appeared to suggest, make a completely automatic case for an increase in expenditure to attract tourists, nor for New Zealand ventures into the shipping industry.

There are no important structural changes to report regarding export trade. The usual grassland products remain dominant; the

"new" export industry of timber, pulp and paper, ran its total up by over £1m. to £8·3m. for 1959. This group makes a valuable addition to our overseas income, but it is still dwarfed by the staples of dairy produce, meat, and wool, which provide about a third each of export revenue. The direction of exports has remained steady, principal destinations being the U.K. (56·8 per cent), U.S.A. (14·6 per cent) and E.E.C. countries (14·4 per cent).

The interesting feature of imports concerns how they behaved under initially sharp controls (January 1, 1958), which have been relaxed during last year and again this. Lagging is very apparent; first in the seven months or so which it took before the controls started to reduce the monthly import returns, and up to now in the relatively delayed response which private imports made to a more liberal issue of import licences, themselves based on a more pliable interpretation of industrial groups and availabilities. In this slow working of import controls as a means of meeting trading reverses lies part of the logic of holding overseas reserves, and the possibility of bolstering them by short term borrowings. After all, our liquid London assets are a first means of buying time for our relatively stable internal economy to adjust itself to adversely fluctuating terms of trade. Import controls are a second, and slower means, with some degree of irreversibility in the short and middle runs, for protectionist reasons.

It is a great pity that the export price outlook is clouded on the dairy produce front. With net overseas assets on July 20 (about the seasonal peak) standing at £118·4m., an increase of £12m. over the previous year, policy might have been directed to the very desirable end of freeing imports still further to avoid a build-up around this Christmas. Australia has recently shown the way in the use of imports for this purpose (among others). But our London funds are not really strong yet, even if there seems no very reliable economic dogma to explain how big an "adequate" pool of reserves should be. Perhaps our policy has been too cautious in its husbanding of sterling reserves. If we are prepared to inflate by sharp import restrictions in bad times, we should consider to the full the implications of deflating by liberalizing import controls in better times. In the present state of reserves and export price prospects, it would be a bold stroke to encourage further imports, but it might still be a warrantable one. In any event, the conjuncture of economic circumstances is likely to draw down our overseas assets faster in the last half of 1960 than in the last half of 1959.

Improved trading conditions have been reflected in the balance sheets of the three main primary produce stabilization accounts. The Capital Fund and Special Reserve Account of the New Zealand Wool Commission total almost £33m.; this is some £1⅔m. up on the figures of the previous year, and this increase includes about £½m. of profits made by disposing of wool bought in at auctions. The operations of the Commission in buying wool at designated floor levels undoubtedly worked admirably in stabilizing the weaker types in the 1957-58 and 1958-59 seasons. And to this virtue has been added the reward of resale

on a rising market. But a serious instead of a slight disparity between the Commission's floor price and auction levels would probably have proved too much even for the substantial funds held by the Commission.

The Meat Industry Reserve Account started the year ending in September 1960 with a credit balance of some £43½m.; where export realizations fall below declared minimum prices, this account makes deficiency payments to producers. A weak opening to the export season late in 1959 called for support from the account, which had paid out nearly £1m. by April 1960, chiefly to sustain lamb and ewe mutton prices. Pressure has been removed by a strong lift in prices late in this current season, and the account will probably break about even for the whole year.

The Dairy Produce Account has received the residual impacts of first, a fall in overseas realizations against internal guaranteed prices, and later, a lift in realizations against reduced guaranteed payouts. The balance in the account fell from a peak level of some £27·1m. at the end of 1955-56 by £13·2m. in the season after that, and by a further £21·3m. in 1957-58, leaving it in the red at the end of that year to the tune of some £7·4 millions. The upswing since has been nearly as dramatic: a lift of nearly £9 million in 1958-59, and an estimated further increase of £13·8m. this year, of which as much as a half may be paid out as a lump sum to dairy farmers through their local dairy factories. The extent of these movements indicates that the dairy stabilization system has operated very significantly over the past three years, first as an inflator while the overseas market fell, and later as a deflator when it rose. The lagged stabilizing effect of delaying payouts over the past year is not likely to operate for much longer. The bulk payout will be inflationary; weakish market prospects abroad, when considered in relation to an unchanged guaranteed price already announced for 1960-61, could easily reverse the surplus and convert the guaranteed price system once again into an inflator, though of course a much more moderate one than in the stirring days of 1956-58.

2. *The domestic economy*

The totals show how recovery has found a disinflationary blend with restraint. Personal expenditure on consumer goods has not kept up with salary payments, nor with the nominal and real rates of total increase in G.N.P. This improvement in national thrift shows in the net overseas investment item which becomes positive by a remarkable total shift of £61 million. At some cost in internal consumption, London assets have been improved and some debts repaid.

This situation has been matched by an increase of total small savings, which ran up by some £23m. over the last March year. However, it would be unwise to rush to a deduction that this country, having realized the error of its inflationary ways, was developing voluntary internal restraints as a cure to its almost chronic tendency to balance its payments by deficits. The increase in small savings may represent the restoration of balances depleted in the 1958-59 year; it

TABLE II

Gross national product and expenditure (years ended March 31)

(£ million)

	Years ended March 31			
	1956 -57	*1957 -58*	*1958 -59*	*1959 -60*[1]
Income:				
Salary and wage payments	495	534	560	594
Pay and allowances of Armed Forces	12	13	12	13
Rental value, owner-occupied houses	24	25	27	28
Other personal income	250	246	247	280
Company income	98	106	110	118
Government and local authority trading income	31	33	37	41
Less public debt interest paid in New Zealand	—23	—26	—28	—30
Net National Income at Factor Cost	886	930	965	1045
Plus indirect taxation	84	91	104	108
Less subsidies	—13	—14	—14	—13
Net National Income at Market Prices	957	1008	1055	1140
Plus depreciation allowances	72	78	86	93
Gross National Product	1029	1086	1141	1233
At 1955 prices	988	1020	1018	1075
Expenditure:				
Personal expenditure on consumer goods and services	672	728	752	773
Cost of Government provided goods and services	140	148	155	165
Gross capital formation in New Zealand—				
(a) Private	122	138	136	142
(b) Government	103	107	106	109
(c) Change in stocks	10	16	16	7
Net overseas investment	—18	—51	—24	37
Gross National Expenditure	1029	1086	1141	1233

[1] Provisional. *Source*: Official.

is surely reasonable to assume that depositors have a powerful "normal level" psychology where their nest eggs are concerned.

What this improvement shows is external recovery not yet fully transmitted into the internal expenditure stream, partly because of import controls, and partly because of lagging. With higher money wages now in full flow, with heavy current government expenditures, a record housing programme and the bulk dairying payout, there are enough "bull forces" at work in the economy to swing the balance of the aggregates on to a more expansive basis, with a correspondingly lowered export surplus, in the current financial year.

One item in the pattern of the distribution of private income calls for comment this year. This was a lift from 7·7 per cent to 8·7 per cent for social security beneficiaries which chiefly follows upon an increase in universal superannuation from £3 to £4 per week. At its new total, social security benefits are claiming a share of private income which has only once been equalled since the war, and never exceeded. Since

1946, however, that share has never dropped below 7 per cent. Those who generalize about the unfortunate position of pensioners and fixed income receivers in times of inflation might note this information. Perhaps fixed income receivers are not as numerous as we often assume.

Prices, wages and production

The Consumers' Price Index has remained remarkably steady; at 1147 (1955 = 1000), the figure for the current June quarter is only five points up on the June figure of 1142 for 1959. Relatively minor reductions in the price of motor spirits, cigarettes and tobacco were made by a change in the direct taxes on those items late in 1959. Import prices made their first fall (by 1·3 per cent) for many years.

There should be some concern that the Consumers' Retail Price Index, which is sensitive to changes in indirect taxes and subsidies as well as to market prices, should on this account give grounds for general wage orders in the Arbitration Court. If a Budget seeks higher revenue by increasing taxes on, say, beer and cigarettes, a claim that this warrants a wage increase not only neutralizes what may be a desirable fiscal effect, but throws in a change in the distribution of real incomes for good measure. It would be unfortunate if fiscal powers over the "cost of living" should come to be paralysed and diverted by fear of wage orders. The 1959 wage order appears to have avoided this risk.

There is every reason to expect that the excellent recent record of retail price stability will not hold into 1961. Many arguments have already been adduced to support this view; not least influential will be the increase of money wage rates by 5·4 per cent late in the March year 1959-60. This increase is hardly compatible with the stable wholesale costs of locally produced items which over the same year went from 1072 to 1074 (1955: 1000).

It is true, of course, that rising productivity together with a favourable swing in the terms of trade would counter the lagged inflation implicit in the statistics. That there has been an improvement in external trade followed by growing imports has already been noted; I estimate that this will not alone deflate the situation to the point where the economy could be "opened". Internally, production trends are stable.

The rapid increase in the production of wheat demonstrates that a higher internal guaranteed price in a generally weaker price setting can still increase outputs in the accepted textbook manner. Whether we are wise to seek further self-sufficiency in wheat (it is estimated that two-thirds of local needs may be met by the new season's crop) while surpluses pile up abroad, is an open question. The issue concerns the real opportunity costs and foregone revenues. Lamb production will be lost to the extra wheat, but the marginal revenue from sales of lamb in the U.K. may be low enough for a net total advantage to lie with wheat-growing.

The real rate of increase remains unspectacularly steady. The annual increase in the labour force to April last was 16,700, bringing

TABLE III

Volume of dairy, meat, wool, and wheat production

Season[1]	*Gross butterfat production*	*Meat production*	*Wool production*	*Wheat production*
	million lb.	thousand tons	greasy basis, million lb.	thousand bushels
1956-57	523	670	491	2,950
1957-58	557	688	496	3,727
1958-59	555	738	540	6,039
1959-60 (estimated)	544	753	565	8,462

[1] The season for dairy produce and for wool ends on June 30 and for meat on September 30.

Source: Official.

a total of 882,500. This increase was about an average of the trend for the past five years: recruitment to the working force will soon be moved powerfully upwards as the post-war birth groups leave school for work.

The distribution of the labour force remains on a characteristic pattern, with primary industry about steady, building and the tertiaries leading the way (up 9,000) and manufacturing in between (up 5,400).

TABLE IV

Value and volume of factory production

Index numbers

Base: 1956-57 (= 1000)

Production year	*Value of output*	*Net value of production (added value)*	*Volume of production*
1955-56	974	972	994
1956-57	1000	1000	1000
1957-58	1072	1098	1072
1958-59	1096	1163	1130

It is impracticable to resolve all these increases into a single real productivity rise, either in total or per head. But it looks unlikely that current real total increases are exceeding about 3 per cent, as against a total nominal movement of about 8 per cent (G.N.P.). In the circumstances, it looks as though prices will rise as inflation presses, especially when the high level of investment in the economy is taken into account.

After a quiet year 1958-59 (June) in which total sales declined by 1·8 per cent, the 1960 June year showed a marked recovery with an increase of 8·9 per cent. The pattern of the increase is unusual, as the seasonally corrected figures show. March quarter figures, the aftermath of Christmas, usually decline, but the seasonally corrected figure showed a rise, which has continued about normally into the June quarter. This is all the more surprising because savings bank deposits

TABLE V

Retail turnover

Quarter ended	In current £ million		In constant 1957-58 £ million	
	As recorded	*Seasonally corrected*	*Before seasonal correction*	*Seasonally corrected*
1959—June	124	125	119	120
September	123	127	118	121
December	145	130	139	124
1960—March	129	138	123	132
June	136	137	129	131

Source: Official.

rose sharply during this bullish phase of retail trade early in the year. The outlook is for a very brisk Christmas trading season.

The trend of total investment set out above has bridged the recession with little disturbance; the growth logic of our increasing population is likely to keep the investment sector under some pressure. There is evidence that the ceiling at the moment may be a capacity one, in the hard-pressed building and contracting trades, for example, rather than a financial one. Long-run arguments have suggested both that total

TABLE VI

Gross capital investment (excluding changes in stocks)
(£ million)

Year ended Mar. 31	Private				Government					
	Building	*Other*	*Total*	*% of G.N.P.*	*Central*	*Local*	*Total*	*% of G.N.P.*	*Grand total*	*Grand total %*
1957	64	58	122	12	72	31	103	10	225	22
1958	78	61	138	13	72	35	107	10	245	23
1959	76	60	136	12	71	36	107	9	243	21
1960[1]	84	58	142	12[2]	72	37	109	9[2]	251	20[2]

[1] Provisional. [2] Preliminary.

Source: Official.

investment as a percentage of G.N.P. is too low, and that the share of the government sector is inadequate. But the most interesting feature of the short-run investment picture concerns private housing.

The last total in this list is a record, and according to the latest report from the Minister of Housing, "credit for the current stimulus to housing is due principally to three factors: the availability of State advances loans at 3 per cent interest, the capitalization of family benefits for housing purposes, and the expansion of the State rental construction programme".

TABLE VII

House building

Year ended March 31	*Permits issued for New Buildings*	*Government-built Houses*	*Private houses*	*Total new houses*
1956	19,504	3,100	16,100	19,200
1957	18,354	3,700	15,500	19,200
1958	18,950	2,500	16,100	18,600
1959	20,568	2,200	17,400	19,600
1960	23,578	2,500	19,100	21,600

Source: Official.

Government finance certainly plays a dominant part in house building, apart from government-built houses as such.

In the last year above, 77·3 per cent of the amount advanced was at the rebated interest rate of 3 per cent. The latest quoted average rate of interest on mortgages is 5·06 per cent and the general basic rate on new first mortgages is now 5½ per cent. Clearly, the element of subsidy in housing costs is considerable, and it covers more than half the total of all private houses built.

TABLE VIII

State advances loans for houses

Year ended March 31	*Total loans authorized £ million*	*No. of dwellings*
1957	13·8	6,789
1958	16·1	7,641
1959	23·2	9,932
1960	29·5	12,015

"... the Family Benefit Home-ownership Scheme was introduced on April 1, 1959. Under this scheme parents are able to capitalize their Social Security family benefit and draw a lump sum in advance for the deposit on a family home."—So reads the Minister's report. In its first year the scheme's authorizations were as follows:

	No.	*Amount*
Erection of new houses	6,308	£4,231,001
Alterations to homes	1,218	£599,302
Repayment of debts and encumbrances	1,816	£853,771
	9,342	£5,684,074

Judging by real estate advertisements in the daily newspapers, the volume of building under the scheme is growing apace. Another record housing year is no doubt in prospect.

Finally, direct government building of houses and flats is on the

increase. This rental programme is expected to continue to rise, and there is an increasing proportion of higher-density housing as it grows; this should be a desirable counter to the problem of urban sprawl.

Along with butter, milk, bread, flour, eggs and gas, housing has been selected for subsidized treatment. It must be admitted that the growth of the nation must draw heavily upon resources for housing. But the combination of growth and selling below cost may distort the allocation of resources, girdling our towns with a patchwork of new houses at the expense of some reconstruction and maintenance of older areas, and perhaps delaying commercial, transport, utility, and industrial construction.

Monetary and fiscal conditions

TABLE IX

Causes of changes in the volume of money

(£ million)

	1957–58	*1958–59*	*1959–60*	*1950–60*
(a) Overseas transactions ..	−39·6	+25·1	+22·7	+23·4
(b) Bank credit—				
1. Reserve Bank advances to State for general purposes	+25·1	−29·0	+18·9	−15·7
2. Reserve Bank marketing and other advances	+ 9·4	− 6·4	−22·9	+ 6·5
3. Trading bank advances and discounts	+15·0	− 6·7	+ 5·1	+86·0
4. Trading bank investments in New Zealand	− 0·1		− 0·1	+10·0
5. Total bank credit, 1 to 4	+49·4	−42·1	+ 0·9	+86·9
(c) Shift from time to demand liabilities of trading banks	− 2·1	− 4·6	− 6·0	− 6·7
(d) Other items	+ 6·1	+ 1·6	− 4·0	+10·5
Total change	+13·8	−20·0	+13·6	+114·1
Index of velocity of circulation of bank money in March, base: 1938 (= 100)	94	95	100	

Source: Official.

The general picture is of a money supply increased by the best means, net overseas receipts. Private credit transactions played a comparatively neutral part in a fairly steady year, and government operations represent an inflationary pressure, counter-balanced by reduced loans for marketing purposes.

From stern restraint in 1958, fiscal influence has progressively relaxed, not so much by the relatively modest reductions made in commodity and income taxes, as by growing expenditures. Mr. W. Rosenberg has calculated that the excess of all government expenditures over revenue from current sources in 1959-60 was £34 millions, and that to this amount will be added a further £13 millions in 1960-61. This amount of £47 millions has to be financed this year from capital

sources, which include increased Post Office Savings Bank deposits, and cash loans.

The 1960 Budget was reasonably restrained for this election year, its principal policy influence bearing on the capital market. A long period of rationing of new consents by the Capital Issues Committee was brought to an end, as regards most business fields, by the issue of a general consent. Specific permission is still needed in four cases; the important restriction applies to hire purchase finance companies, which are likely to be held in check. Indeed, worse has befallen them, for an Interest on Deposits Order has been brought into effect. This specifies maximum interest rates which may be paid on deposits with trading companies and certain other organizations such as building societies and investment companies. The maximum call rate is 2 per cent, and rates range upwards to 5 per cent when the period of deposit is not less than five years. These rates are much lower than those which have hitherto been in general force for deposits with companies, and they are likely to cause a marked swing away from the employment of funds in this way.

Other minor changes were directed towards the encouragement of investment (increased special depreciation allowances) and savings (increased tax exemption for life insurance and superannuation premiums), It was also announced in the Budget statement that the Government had decided to introduce a postal clearing service. This will presumably be a giro system, and it is likely to operate through the post office. At the same time, the Minister of Finance made an affirmation that the sovereign right of the State to control the issue of currency and bank credit was regarded as vital by the Government; and "legislation will therefore be introduced this year to place this beyond doubt". Whatever the trading banks may be thinking or doing about all this they have not revealed in public.

3. *Economic theorizing at the turn of the decades*

It has been suggested that economics as a university subject has been a depressed industry in recent years. This may be true, but there has here been a notable revival of general interest in it. Newspapers solicit opinions, the economic commentator is in brisk demand for articles and public lectures, and, to cap all, an Industrial Development Conference was held in June, under government auspices. This elucidated many aspects of the country's economic life, discussed the material presented in closely-argued sessions, and will shortly publish a series of conclusions.

It is likely that this contemporary ferment of thought about New Zealand's economic prospects has been encouraged by doubts about how well this economy will progress in the 1960's. Difficulties are envisaged because of fluctuations in the terms of trade and the vulnerability of our dependent economy. Many of the fears expressed about over-reliance upon those three grassland exports (which have to sell abroad in the teeth of other countries' dumping, protectionism,

periodic deflations, customs unions, inelastic demands and synthetics production) recall the animadversions on dependence which were a commonplace of the depressed early thirties. And it is salutary to reflect that a quarter of a century of strengthened mixed protective devices for secondary industries, together with the extra stimulus of a war and its aftermath of shortages, have failed to make this economy significantly more self-sufficient. True, the nature of the dependence has changed; with finished consumer goods down to less than a fifth of all imports, raw and semi-finished materials constitute the vulnerable section of our import trading. The threat now is unemployment in factories unable to secure components for processing and assembly.

The case against over-dependence must, however, be considered with some reservations. In fact, our grassland exports do give us some spread of risk, and this has been amply demonstrated in the past three years, when one or other of the three staple lines remained strong to offset weakness elsewhere. Furthermore, the terms of trade have not always served us badly: Real National Income has risen from 100 to 130 over the period 1950-59. Corrected for changes in the terms of trade the increase over that period was from 100 to 139. Perhaps too much ought not to be read into this sort of argument; nevertheless it should be realized that there may be an economic price to be paid for greater self-sufficiency: a price which it is not easy to balance against the cost of the instability of our overseas trade. The imponderables here are not made lighter when it is realized that, in terms of economic efficiency, our grassland industries stand at the head of the list, while many of the proposals for decreasing dependence are based upon *ex ante* estimates, either of changed structures in existing secondary industries, or of new industries altogether.

The growth of our population further stimulates attention to possible changes in our economy. For some years past it has been argued that, heavily dependent upon imports as we are, and with a rising marginal propensity to import as real income grows, our increasing population would be making heavy demands upon the export capacity of the grasslands, to say nothing of the absorptive capacity of our traditional overseas markets. A rate of population growth of about 2¼ per cent per annum serves to cast the admonitory shadow of Malthus across the land. New Zealand's natural resources are traditionally regarded as poor, and gloomy prognostications have been commonly heard that the grasslands, their returns diminishing, would leave increasing urban populations poorly provided with imports to take in one another's very expensive washing.

Although I myself am far from convinced that its basic postulates are ill-founded, the "fear of population" school of thought is not now heard so much. There are two main reasons for this. Agronomists have become more optimistic about the prospects of increasing the productivity of our grasslands in step with general population expansion over, say, the next twenty-five years. They stress the importance of increased investment in research and improvements, and claim that

more labour could be productively absorbed on the farms, which would be a change from the static picture presented by the rural working force over the past decade. At the same time, long-term estimates of selling prospects abroad are not as gloomy as they used to be, and much is heard of diversification of overseas markets, aggressive selling, provision of export credits and facilities, and the like. One thing is true about our primary producing industry: nothing is going to succeed like success. Prosperity at home enables the farmer to plough back for increased output: prosperity abroad will extend our selling opportunities, especially as our exports are mostly in a semi-luxury class.

There is also much more confidence lately that urban population increases can be productively absorbed in industry. A new oil refinery, and possibly an aluminium smelting plant, are at the planning stages. Promising opportunities are claimed for further electro-chemical plants. And research into the possibilities of making an economic iron and steel industry based on extensive deposits of iron sands is under way. The forestry industry, too, is to extend its capacity, which will increase both exports and supplies to the home market. It is desirable that new developments should depart from the all-too-common small-scale plants which, if they persisted, would be apt transmitters of secular diminishing returns.

And so the fear of population has been rather dramatically replaced by its very opposite, a desire for even faster growth of population, to exploit the more promising resource pattern, and to provide the economies which are expected to come from larger markets fed by larger factories. To assist in this transformation, the apostles of growth point to two basic conditions: that investment as a share of G.N.P. should go up from a current rate of something just over 20 per cent to as high as 30 per cent, and that our rapid rate of natural increase of population (and working force, too, in the coming decade) should be boosted by immigration.

It is recognized that the realization of such a growth pattern would need many changes. Not the least would be in the attitudes of a country more dedicated to a somewhat leisurely security than to displaying enterprise on a Babbitt-cum-Stakhanovite model to suit our mixed economy. And overseas capital would be needed in greater quantities than we have been recently accustomed to. Whether this should be in equity form or otherwise, a matter under discussion lately, will depend partly upon what prospective lenders will want, and partly upon one's estimate of how long prosperity with inflation is likely to continue. Finally, burgeoning industry will require protection, and what mixture of import controls and tariffs will prove appropriate to the marriage of enterprise with stability is not easy to determine. A reform of the administrative structure of the Board of Trade is promised, and the Industrial Development Conference expressed a preference for generally higher tariffs to replace at least some import controls.

The shake-up in outlooks implied in all the discussion is valuable.

It has produced a desirably critical attitude to welfare state complacency. It may, too, make for a climate of opinion which will break down the pattern of economic activity which maintains a forty-hour week, a rigid Shops and Offices Act, a desire by most to do things at the same time of the day or year as other people, some resistance to shift work and incentive payments, and the general tolerance of the consumer not counting for much. A good deal is to be gained by a general staggering of working and shopping hours.

But in this tranformation of opinion towards the desirability of growth, in place of fear of it, all is not harmony. There are still very serious problems of how our growing urban populations may be profitably employed: the micro-economic question is very relevant. And there is some disquiet about how the growth of the economy will affect the farming sector in its relationship with secondary industry.

One group of opinions might be described as an "open economy" school of thought. Putting farming first, this group calls for devaluation of the currency, greater credit and fiscal encouragements for farmers, and the use of moderate general tariff increases in place of import controls. General concern is expressed that the marginal growth of primary industries will be unduly restrained if too much is done for secondary industry. In a sense, the group is really asking for the terms of trade between the rural and urban sectors not to be swung by over-enthusiasm for urban growth and industrial novelty, all guaranteed and protected. How, it is asked, can the farmer afford another rouseabout, if the factories of Lower Hutt are luring him into a job in a protected industry, with overtime and a new family benefit home thrown in? What will happen to the farmer's incentives if production which can be sold for good sterling produces equivalent income which has to be spent on New Zealand made commodities inferior in style and quality, and higher in price, than their overseas counterparts?

These views deserve serious attention. There is surely no real doubt that the priority in New Zealand's development is for our farms and for the services which support them. But the economy will hardly stand the strain of devaluation to help the market to achieve this; the impact of such a step would be too quickly transmitted into a general internal inflation by the efficient mechanism of the General Wage Order of the Arbitration Court.

At the same time, enthusiasm for new industrial developments could be misplaced, and a heavy programme of immigration might put such stresses on the economy that only the forced savings of inflation will be left to come to the rescue. Nevertheless, opinion in favour of planned industrial development is growing in strength, and the political balance of power may already be in urban hands. The "closed economy" is likely to dominate the 1960's, and it will be interesting to see how the coming decade will measure up against the fairly modest 14 per cent increase in real living standards per head of population achieved in the 1950's.

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THE STABILITY OF WARRANTED GROWTH[1]

I. Introduction

In the twenty-one years since Harrod published his "Essay in Dynamic Theory"[2] the feature of his growth model that has attracted most attention is the marked instability of the equilibrium or warranted rate of growth. Given Harrod's assumptions about an economy there is an equilibrium rate of growth of income which, if established, will be maintained, but this equilibrium rate is so unstable that any slight deviation from it will cause increasingly large deviations in the same direction. This proposition has wide ramifications and is particularly relevant to a basic question in growth economics, namely, whether growth in a free enterprise economy will occur at a rate determined by supply conditions or at one determined by effective demand. In Harrod's terminology, will an expanding free enterprise economy tend to grow at a rate, G_n, which is the maximum "rate of advance which the increase in population and technological improvements allow"[3] or will it grow at a rate G_w, the rate which ensures that investment is precisely "warranted", *i.e.* that there are neither surpluses nor deficiencies of capital. As G_w is also Harrod's equilibrium rate of growth, the stability of this equilibrium rate is of some relevance to the question. If one accepts Harrod's thesis that G_w is an unstable equilibrium, then it follows that growth will tend to occur at a rate equal to G_n. Whenever the rate of growth is less than G_w it will diminish until there is no growth at all. Growth is unlikely to continue for long at a rate precisely equal to G_w, since any slight disturbance will cause the rate of growth to depart further and further from G_w. Therefore, if there is to be growth, it must be at a rate greater than G_w; and if there is growth at a rate greater than G_w, the growth rate will increase rapidly until it reaches G_n, the maximum possible rate of growth. That is, in an expanding economy growth will tend to occur at a rate equal to G_n. This argument falls to the ground if Harrod's instability thesis is not valid.

In a recent article Rose argues that the instability of Harrod's equilibrium rate of growth depends on an implicit and unjustified assumption of lags in the investment function, and that, if this assumption is removed, Harrod's equilibrium rate of growth is a stable one.[4] The present article argues that Rose's criticism of Harrod

1. A large part of this article is based on material included in a thesis submitted for the degree of Ph.D. at the University of California, Berkeley.

2. *Economic Journal*, Vol. XL (March 1939), pp. 14-33. The ideas in this article were elaborated in *Towards a Dynamic Economics* (Macmillan, London, 1948) and "Notes on Trade Cycle Theory", *Economic Journal, Vol. LXI* (June 1951), pp. 261-276. Hereafter these three works will be referred to as "Essay", *Towards*, and "Notes" respectively.

3. *Towards*, p. 87.

4. See H. Rose, "The Possibility of Warranted Growth", *Economic Journal*, Vol. LXIX (June 1959), pp. 313-332.

on this score is unjustified, but that if one examines the other, explicit, assumptions in Harrod's model, one will find better grounds for the thesis that G_w is a stable equilibrium rate of growth. The key assumptions from this point of view are that a constant proportion of income is saved, that all investment is acceleration-induced investment, and that entrepreneurs' expectations of future income levels are based on events of the immediate past without any consideration of whether changes observed are likely to be permanent or transitory. In this article each of these assumptions is examined in turn and it is shown that in each case relaxing the assumption tends to make G_w more stable.

II. Harrod's Model and Rose's Amendment

For convenience we will very briefly set out Harrod's model using the symbols of *Towards a Dynamic Economics*. The basic equation is an identity $GC = s$. An examination of the definitions of the terms G, C and s will show that this reduces to savings equals investment. G is the increase in production in any period expressed as a fraction of total production. In the symbols conventional in macroeconomics $G = \frac{\Delta Y}{Y}$. C is the increase in capital over the period divided by the increase in production over that period, *i.e.* $C = \frac{I}{\Delta Y}$. And s is the proportion of income saved or, in conventional symbols, $\frac{S}{Y}$. Thus $GC = s$ can be written $\frac{\Delta Y}{Y} \times \frac{I}{\Delta Y} = \frac{S}{Y}$ which reduces to $I = S$ or investment equals savings.

Harrod then introduces the equation $G_w C_r = s$. G_w is the rate of growth "in which producers will be content with what they are doing",[5] *i.e.* in which neither surpluses nor deficiencies of capital develop so that investment is precisely "warranted". If entrepreneurs expect the most recent past rate of growth to continue, then once G_w is established growth will continue at that rate in the absence of shocks from outside. C_r is the desired marginal capital-output ratio, *i.e.* $C_r = \frac{I^*}{\Delta Y}$ where I^* is the amount of investment entrepreneurs in total desire to make when income increases by ΔY. If both C_r and s are constant G_w will also be constant. Harrod assumes that s is constant and that, given the rate of interest, C_r is also constant. It also follows from the constancy of s and C_r that G_w is an unstable equilibrium. In Harrod's own words:

> . . . . if the value of G is above that of G_w, the value of C must be below that of C_r; there will be insufficient goods in the pipeline and/or insufficient equipment, and orders will be increased [increasing the rate of growth still further]. If the value of G is above the value of G_w, that is if the actual rate of growth is above

5. *Towards*, p. 81.

the line of growth consistent with a steady advance, orders will be increased. And, of course, conversely.[6]

There is one final concept, G_n, to consider. "G_n ($_n$ for natural) is the [maximum] rate of advance which the increase of population and technological improvements allow."[7] If G_n is below G_w, G will generally be below G_w, and the economy will be stagnant. If G_n is above G_w, G will generally be above G_w and the economy will be secularly booming.

Rose argues that the key feature of Harrod's model, the instability of G_w, depends on an implicit lag in the investment function, and that if this is removed the instability disappears. He combines the assumption of a constant average propensity to consume with the investment equation $i = c\frac{dy}{dt} + kv$ where i is investment, y income, t time, v the amount of capital deficiency, c the acceleration coefficient and k a positive constant. Rose has no difficulty in showing that the resulting model gives a stable not unstable equilibrium growth path.[8] But consider the implications of $i = c\frac{dy}{dt} + kv$.[9] $\frac{dy}{dt}$ is the rate of growth of income at a point in time. In other words, as the rate of growth of income changes from month to month or even from day to day, investment changes also. If, for example, after orders have been given (and the physical investment started) the rate of income growth declines temporarily before the physical investment is finished, the rate of investment will also decline even though this may mean cancellation of some orders. Similarly, if the rate of growth increases, however temporarily, the rate of investment increases, equally temporarily. A rate of investment as volatile as this is decidedly implausible. It is more usual in models of fluctuations and growth to make use of the device of the planning period when considering investment. This results in a less volatile rate of investment. At the beginning of the period entrepreneurs make investment plans and do not change these plans during the period.[10] The period can be quite short provided it is not virtually instantaneous (as in Rose's model). If period analysis is used a constant average propensity to consume can be combined with a function which makes investment a constant ratio of the expected increase in income during

6. *Ibid.*, p. 85.
7. *Ibid.*, p. 87.
8. See H. Rose, *op. cit.*, pp. 319-20.
9. In an article published since this one was written Harrod himself rejects this equation of Rose's as a useful description of investment behaviour. His reasons for doing so are very similar to those we give below. See "Domar and Dynamic Economics", *Economic Journal, Vol. LXIV* (September 1959), p. 459.
10. It is true that the use of a planning period introduces what Rose calls a lag in the investment function. As plans are not changed during the period the behaviour of income during the period cannot affect investment in that period but only in the next.

a period plus any deficiency of capital existing at the beginning of the period. If an assumption that entrepreneurs expect the most recent past rate of growth to continue is added, the resulting model has the formal characteristics of Harrod's model, and in particular has an unstable equilibrium rate of growth of income.[11]

III. Harrod's Key Assumption

The three key assumptions mentioned in section I are now examined in turn. It is shown that each of them is unduly rigid and that relaxing them reduces the instability of the equilibrium rate of growth.

The first assumption to be examined is that relating to savings. Harrod assumes that savings is a constant proportion of current income.[12] The issue is not, of course, whether the proportion of income saved is absolutely invariable, but whether it is likely to vary significently relative to variations in the rate of growth of national income. Harrod maintains that it will not.

> Without any great revolution G might easily change from 2 to 6 per cent. This clearly could not cause saving to be trebled. The extreme case of savings being as low as 2 per cent. of income and all extra income, due to a rise of G, being saved may be ruled out. If saving is greater than 2 per cent. then for saving as a fraction of income to increase by as much as G, consumption would have to be cut (in all probable circumstances by large amounts) as income rose, and this, too, may be ruled out.[13]

The matter is not quite as clearcut as this. Remember that Harrod is talking about magnitudes in real terms, not money magnitudes. Remember also that he is concerned with departures from an equilibrium rate of growth, not with an economy already in the depths of slump or the heights of a boom. If, say, the equilibrium rate of growth of the national income is 2 per cent., it seems to the present writer that it would need a very great revolution for the real rate of growth to increase suddenly to 6 per cent. Any likely changes in G are smaller than the one in Harrod's example; hence it is not immediately apparent that changes in s will necessarily be insignificant in relation to them.

Perhaps more important is the possibility that changes in G may bring about corresponding changes in s, through changes in the level of undistributed profits. If G increases sharply the level of undistributed profits as a proportion of income is likely to rise. Harrod himself notes that "companies are likely to save a large fraction of

11. It is demonstrated in the mathematical appendix that these three assumptions plus the identity investment equals savings and an assumption placing wide limits on the parameters constitute a formal version of Harrod's model.

12. Some might wish to argue that the consumption function should be lagged. Lagging this function would strengthen our argument, as it would cause the relationship s between savings and current income to vary in the same direction as G.

13. *Towards*, p. 79.

short period increases of net receipts".[14] If G declines the reverse is likely to occur and the level of undistributed profits as a proportion of income will fall. In extreme cases the level of undistributed profits may even become negative.

The tendency for undistributed profits as a proportion of income to vary with G can be observed in empirical data. For example, in Australia in the period since 1948 undistributed profits have usually been between 3·2% and 3·4% of gross national product. The years in which they were a noticeably higher proportion were 1950-51 (5·1%, 1953-54 (4·5%) and 1954-55 (4·0%). These were all years in which gross national product in real terms increased greatly. In 1950-51 the increase in real gross national product was the greatest in the period, and was roughly four times the average increase. In the other two years mentioned the increase in real gross national product was roughly twice the average for the period. The only year in which undistributed profits were much below the normal proportion of gross national product was 1952-53, when they were 2·3% of gross national product. In this year there was almost no increase in real gross national product. It is true that in 1951-52 real gross national product actually declined in Australia, but that undistributed profits were still 3·2% of gross national product. However, this was a year of very great inflation (which kept up company income and undistributed profits). The behaviour of an economy under great inflationary pressure is not very relevant to Harrod's case of departures from an equilibrium rate of growth.

Thus both *a priori* arguments and empirical evidence support the proposition that as G varies the level of undistributed profits and hence s vary in the same direction. It is not argued that when G changes there will usually be a change in s large enough to offset it completely, so that there is no change in C. Nevertheless, it is likely that s will tend to change in the same direction as G and this together with other factors to be discussed may be sufficient to reduce greatly or even completely eliminate the instability of the equilibrium rate of growth.

Next let us examine the assumption that all investment is induced by changes in the level of income or output. Harrod assumes that C_r, the desired marginal capital-output ratio, is constant (*i.e.* that it is constant given the rate of interest; it may vary in response to changes in the interest rate). At first glance this seems a useful simplifying assumption. It might be argued that, given a constant rate of interest, changes in the desired marginal capital-output ratio are likely to be random, and to be different in different industries so that not much distortion is introduced by assuming that, on average, the marginal capital-output ratio is constant. However, this assumption has several

14. *Towards*, p. 89. In the context short period means the period relevant to trade cycle analysis as opposed to secular growth or stagnation. It is argued below that Harrod's analysis of the relationship between G and Gw is short-period analysis in this sense.

implications, and in particular it rules out any autonomous investment. Given the rate of interest all investment must be made in response to a change in national income. (Or, if there is any autonomous investment, it must supply the productive capacity that would otherwise be supplied by an exactly equal amount of induced investment so that there is no point in distinguishing autonomous investment and it can be included in induced investment.) Apparently, in the world described by Harrod's model even such things as housing investment are determined solely by changes in the level of output.

It is true that Harrod disarms criticism by suggesting that his identity may be rewritten $GC = s - k$, where k is antonomous investment, and C only includes investment not included in k. He then ignores k on the ground that it is only a short-run phenomenon. "In the long run," says Harrod, "k must disappear, for in the long run all capital outlay is justified by the use to which it is put."[15] However, Harrod's analysis showing that any small shock will cause a constantly increasing divergence of G from G_w is not a long-run analysis, but is concerned with the short run and with short-run forces. The consequence of G being greater than G_w is a trade cycle boom, not a Kondratieff upswing. In his formal analysis, whether for the short run or the long run, Harrod completely ignores k, and his conclusions largely rest on this omission. The instability in Harrod's model depends on the right hand side of his identity being constant. Harrod discusses whether or not s is a constant. He does not discuss at all whether or not $s - k$ is likely to be constant.

It is also true, as Domar argues,[16] that if autonomous investment is assumed to be as productive as induced investment, and if we are only concerned with aggregates, then autonomous investment should be treated as a deduction from the induced investment that would have taken place in the absence of any autonomous investment. Thus, if autonomous investment is always smaller in magnitude than the amount of investment that would be induced by the simple working of the acceleration principle, the distinction between the two types of investment can be ignored, and all investment can be considered induced investment.[17] But this aggregative view is too simple and seriously distorts the significance of autonomous investment with respect to the acceleration principle. For example, what induced investment and desired increase in productive capacity would be replaced by an increase in investment in housing? Or again, if a new invention causes premature abandonment of existing capital equipment, would this not provide an additional demand for investment independent of any changes in output? Autonomous investment as a source of additional net investment cannot be ignored.

15. *Towards*, p. 79.

16. See "Expansion and Employment", *American Economic Review*, Vol. XXXVII (March 1947), pp. 34-35.

17. It is ironical to note that Harrod's unused equation $G_w C_r = s - k$ explicitly rules out this loophole as it implies that autonomous investment does not raise productive capacity.

Let us then examine the effect of including autonomous investment in the model. In this context autonomous investment is any investment that is not directly induced by a change in the level of national income and output. It may be innovational investment, investment induced by shifts in demand, investment induced by the level of national income (as opposed to changes in its level), investment induced by changes in population or geographical location, and so on.[18] There are three possible alternative ways of treating this autonomous investment. The first, which we have already discussed, is to consider it as a deduction from induced investment. If this is done, then, as we have seen, the introduction of autonomous investment causes no change in Harrod's analysis. The second procedure is to consider (as for example Hicks does in *A Contribution to the Theory of the Trade Cycle*) that all autonomous investment is sterile in the sense that it does not replace at all the need or desire for any induced investment. This second approach is just as unsatisfactory as the first. A third approach is to consider that some autonomous investment replaces the need for induced investment, and that some of it represents an actual addition to the amount of net investment desired. This is not only the most realistic approach but also the most general; the other two can be considered special (limiting) cases of it.

Let us then rewrite Harrod's equation $GC = s - k$ as $GC = s - \frac{Ia}{Y}$. It is obvious that if G_w is to be constant, the right hand side must be constant and hence (granting Harrod's assumption of a constant s) Ia must grow proportionally to income. That is, if the introduction of autonomous investment is not to affect Harrod's analysis, then that part of it which represents a net increase in the amount of investment desired must always grow at the same rate as income and fluctuate as the level of income fluctuates, *i.e.* it must be determined by the current level of income.

However, there is some evidence that in recent years autonomous investment has tended to be constant or to grow at a constant rate, despite, at least, minor fluctuations in income and output.[19] If this is so, what effect does it have on Harrod's analysis? It does not vitiate the existence of G_w, though, if Ia is constant, or growing at a constant but slower rate than income, G_w will not be a constant rate, but will increase over time. However, a more truly autonomous investment which is independent of income will reduce the instability of G_w. Consider the result of an upward divergence of G from G_w. If G or the rate of increase of income increases while the rate of increase of Ia remains the same, $\frac{Ia}{Y}$ will decline.

18. It does not include investment induced by a change in the interest rate. This is allowed for by a change in *Cr*.

19. See J. W. Nevile, "Professor Hicks's Theory of Investment and Post-War Investment Figures in Australia and the United States", *Economic Record*, Vol. XXXIV (August 1958), pp. 249-53.

This will release a greater proportion of resources for induced investment and the deficiency of capital as a result of an increase in G will be much smaller. If, as a result of the increase in G, s also rises, which we argued earlier was likely, then there may even be no deficiency of capital at all. A simple, somewhat unrealistic, example will make this point clear. Suppose in a hypothetical economy $C_r = 1$, $s = \frac{1}{4}$, and Ia is growing at a constant rate such that $\frac{\Delta Ia}{Ia} = 12\frac{1}{2}$ per cent. Suppose, too, that in a certain period $Y = 98$ units and $Ia = 12\frac{1}{4}$ units so that $\frac{Ia}{Y} = \frac{1}{8}$. G_w will then equal $\frac{1}{C_r}\left(s - \frac{Ia}{Y}\right)$ or $\frac{1}{8}$. If in the next period Y increases to 112 units it will have increased by an amount equal to G_w and C will equal C_r. (Savings, equal to a quarter of income, will equal 28 units, Ia increasing at the assumed rate will equal 14 units, and other investment will equal 14 units so that $C = 1 = C_r$). Suppose owing to some outside factor income rises instead to 120 units in the next period. Suppose too that, owing to the rise in G, s rises to 3/10, then C will still equal C_r. Savings will be 36 units, Ia will still be 14 units, and other investment will be 22 units so that $C = 1 = C_r$. If more realistic figures are used it is likely that C will still be somewhat smaller than C_r when G is greater than G_w. Nevertheless, the point remains that a level of autonomous investment that is constant or increasing constantly despite changes in Y, coupled with a tendency for s to increase as G increases, will significantly reduce if not entirely eliminate the instability of G_w.

The third of Harrod's three key assumptions is that expectations of future income levels are based on events of the immediate past without any consideration of whether any changes observed are likely to be permanent or transitory. In the model in which $G_w = \frac{s}{C_r}$, Harrod assumes that entrepreneurs act on the expectation that the most recent past rate of growth of income will continue into the future.[20] This assumption has been attacked by various writers.[21] Some have argued that it is more plausible to assume that businessmen expect the present level of income to continue in the future. Others have argued that businessmen will be so jubilant because of the correct forecast of an increase in demand and the consequent justification of their investment, they will expect even greater increases in the future. This may be particularly likely at certain stages of the upswing when profits are rising rapidly. On the other hand, some maintain that after the upswing has proceeded for a certain time expectations become pessimistic, entrepreneurs think the boom

20. See "Notes", p. 273.
21. See D. Hamberg, *Economic Growth and Instability* (New York, 1956), p. 110.

cannot last forever, and forecast an actual decline in national income.[22]

Except for the last mentioned, these various criticisms of the rate of expectations in Harrod's theory and formulations of alternative assumptions about expectations are not as damaging as they appear at first sight. Harrod has shown in "Notes" that changing the coefficient of expectations changes the value of G_w but does not change the instability of the equilibrium rate.[23] All that is needed for the existence of an unstable equilibrium rate G_w is an assumption of a constant zero or positive coefficient of expectations.[24]

A more serious criticism is that Harrod fails to make any distinction between short-run and longer-run expectations. A businessman may well expect a certain increase in, or increase in the rate of growth of, national income and demand for his product in the immediate future but consider this increase to be transitory. If entrepreneurs in general expect a divergence from the equilibrium rate of growth to be purely temporary and expect income soon to return to the level it would have attained without this temporary divergence, their investment behaviour will be such that the equilibrium rate of growth is much more stable than Harrod's model suggests. This can be demonstrated as follows. When, as is normal in Harrod's model, consumption is a constant proportion of income, savings and therefore investment are also a constant proportion of income. Therefore, when income grows at the equilibrium rate G_w, investment must also grow at this rate so that G_w is also the equilibrium rate for investment. If a temporary disturbance, *e.g.* a temporary shift in the consumption function, changes the rate of growth of income, but entrepreneurs, believing it to be temporary, disregard it and continue to invest so that investment continues to grow at a rate equal to G_w, when the temporary disturbance disappears income will return to a level which justifies the investment made. This must be so because, in the absence of temporary disturbances, investment is a constant proportion of income. Investment has grown at the equilibrium rate, so that, as soon as income returns to its normal relationship, to investment, it must assume the value it would have reached if it had also grown at the equilibrium rate. Thus, the belief that the disturbance in the rate of growth of income was temporary is upheld; and investment made on the assumption that income will soon resume the path it would have taken in the absence of any disturbance is warranted. Thus, if entrepreneurs have the minimum of knowledge and experience necessary to distinguish between temporary and longer-run changes in the rate of growth of income, and if, when a temporary change occurs,

22. This theory of expectations probably had more validity before the Second World War and the various full employment acts. The modern equivalent, that businessmen expect to be temporary a rate of increase of income much greater than that which is normal, is discussed below.

23. See pp. 271-75.

24. Where the coefficient of expectations is defined as expected change in income over the most recent past change in income.

treat it as such by investment behaviour appropriate to the longer-run trend in income, then temporary disturbances from the equilibrium rate of growth will not cause ever increasing divergences and the instability of G_w is greatly reduced.

IV. Conclusion

We have seen that the instability of G_w in Harrod's model depends on the rigidity of three key assumptions. It adds to rather than detracts from the realism of Harrod's model to relax these three assumptions so that (i) s may vary as the rate of increase of income changes, (ii) the existence of autonomous investment is recognized and (iii) entrepreneurs are considered to distinguish between temporary and longer-run changes in the rate of growth of income. If any one of the three key assumptions is relaxed in the way indicated above, the instability of G_w is reduced. If all three are relaxed the equilibrium rate of growth may well be a stable equilibrium for long periods of time.

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Mathematical Appendix

We begin with Harrod's three key assumptions:

(1) $S_t = sY_t$ . . . savings is a constant proportion of current income.

(2) $I_t = b(Y_t^* - Y_{t-1}) + D_t$ . . . investment is a constant ratio to the expected increase in income plus any deficiency in the capital stock. (Y_t^* is the expected income in period t and D_t is the capital deficiency at the beginning of the period. D_t may be either negative, zero or positive.)

(3) $Y_t^* = Y_{t-1} \dfrac{Y_{t-1}}{Y_{t-2}}$ . . . entrepreneurs expect the most recent past rate of growth to continue in the future.

And the identity:

(4) $S_t = I_t$

We can combine these four equations to form the equation:

(5) $sY_t = bY_{t-1} \dfrac{Y_{t-1} - Y_{t-2}}{Y_{t-2}} + D_t$

But (6) $D_t = b\left[Y_{t-1} - Y_{t-2} \cdot \dfrac{Y_{t-2}}{Y_{t-3}}\right]$ since D_t arises when there is a difference between expected and actual income in the previous period, and is equal to the acceleration coefficient times the difference.

Combining (5) and (6) one obtains the equation

(7) $Y_t = \dfrac{b}{s}\left[\left(\dfrac{Y_{t-1}}{Y_{t-2}}\right)^2 - \left(\dfrac{Y_{t-2}}{Y_{t-3}}\right)^2\right]$

Equation (7) is the basic difference equation showing the course of income over time given the assumption of Harrod's model. It can

be shown that this has the characteristics of Harrod's model, namely, (1) there is an equilibrium rate of growth of Y which, once achieved, will be maintained unless there are disturbances from outside the model, and (2) any departure from this equilibrium rate of growth caused by such an outside disturbance will cause successively larger departures from that rate of growth in succeeding time periods.

First let us demonstrate the existence of an equilibrium rate of growth of Y_t. Divide both sides of (7) by Y_{t-1} and put $\frac{Y_t}{Y_{t-1}} = R_t$ for any value of t, then (7) becomes

(8) $R_t = \frac{b}{s}\left[R_{t-1} - \frac{R_{t-3}}{R_{t-2}}\right]$

If an equilibrium rate of growth holds $R_t = R_{t-1} = R_{t-2} = R$ and (8) becomes $R = \frac{b}{s}\left(R - 1\right)$ which assuming $s < b$ gives $R = \frac{b}{b-s}$

Thus there is an equilibrium rate of growth between income in one period and the previous one equal to $\frac{b}{b-s}$. (This is the same rate of growth as that given by $G_w = \frac{s}{C_r}$ since by definition $G_w = 1 - \frac{1}{R}$, and $b = C_r$).

Secondly, it is required to prove that any divergence from the equilibrium rate of growth will cause successively larger divergences in the same direction in succeeding periods.

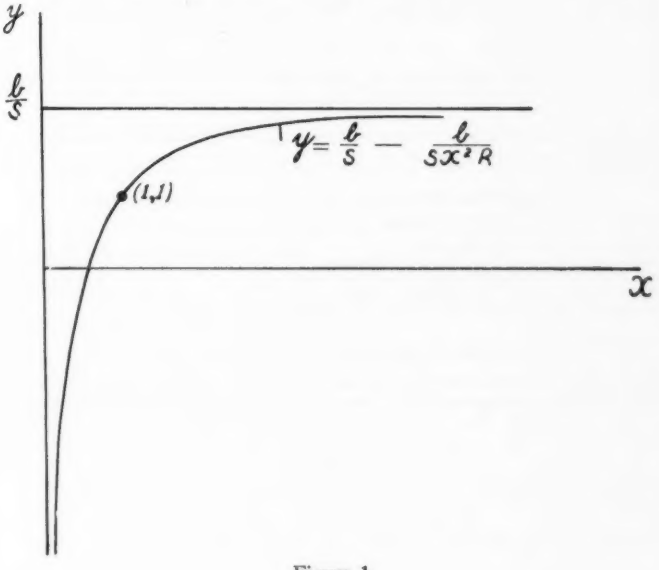

Figure 1

Put $R_{t+1} = xR_t$, $R_{t+2} = yR_{t+1}$, and $R_{t+h+1} = zR_{t+h}$ where h is any positive whole number. It is required to prove that,

$$\text{if } x < 1 \text{ then } y < 1 \text{ and } z < 1$$
$$\text{if } x > 1 \text{ then } y > 1 \text{ and } z > 1$$

both the z inequalities holding for all h.

Assuming $R_t = R$ and substituting $R_{t+1} = xR_t$ in (8) one obtains

$$R_{t+2} = \frac{b}{s}\left[xR - \frac{1}{x}\right] \text{ and } y = \frac{R_{t+2}}{R_{t+1}} = \frac{b}{xRs}\left[xR - \frac{1}{x}\right] = \frac{b}{s} - \frac{b}{sx^2R}$$

As s, b and R are all constants one can graph y against x and the graph has the shape shown in Figure 1.

It is apparent from Figure 1 that when $x < 1$ $y < 1$, and that when $x > 1$ $y > 1$.

To discover how z varies with y put $h = 1$; then substituting in (8) $R_{t+3} = \frac{}{s}\left[yR_{t+1} - \frac{1}{y}\right]$ and $z = \frac{R_{t+3}}{R_{t+2}} = \frac{b}{s} - \frac{b}{sy^2R_{t+1}}$.

This is exactly the same as the equation for y as a function of x with z substituted for y and y for x, except that the constant R_{t+1} is substituted for the constant R, and its graph has the same shape as the graph in Figure 1. Hence when $y < 1$, $z < 1$, and when $y > 1$, $z > 1$. Similarly it can be shown that, if $z < 1$ when $h = 1$, then $z < 1$ when $h = 2$; and if $z > 1$ when $h = 1$, $z > 1$ when $h = 2$; and by mathematical induction it can be shown that if $y < 1$, $z < 1$, and if $y > 1$, $z > 1$ both for all h. Thus when $x < 1$, $y < 1$, and hence $z < 1$; and when $x > 1$, $y > 1$, and hence $z > 1$ both for all h.

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GROWTH AND THE ELASTICITY OF FACTOR SUBSTITUTION[1]

One measure of the shape of production isoquants is the elasticity of substitution between factors. It ranges in value from zero to infinity, implying that no substitution is possible when it is zero, and that factors are perfect substitutes when it is infinity. It has been a limitation on the generality of the conclusions of growth models that explicit treatment of substitution has largely been confined to cases in which the elasticity of substitution between labour and capital is unity. This limitation is imposed by the use of the Cobb-Douglas production function.[2] This article is based on Professor Swan's growth model, but the Cobb-Douglas production function is replaced by a production function which allows the elasticity of substitution to take any value between zero and infinity. It is seen that a variety of growth paths are possible, depending on the elasticity of substitution, and this leads to a reconsideration of the relation between income growth and the saving ratio.

I

As the model differs from Swan's only in the substitution possibilities which it allows I shall not explain in detail the meaning of the system.[3]

Symbols

Y — income; $y = \frac{dY}{dt} \cdot \frac{1}{Y}$;

K — capital; $k = \frac{dK}{dt} \cdot \frac{1}{K}$;

N — labour; $n = \frac{dN}{dt} \cdot \frac{1}{N}$;

σ — the elasticity of substitution between capital and labour;

s — the average *equals* the marginal saving ratio.

Savings are assumed equal to investment and the marginal product of labour equal to the real wage throughout.

1. The development of this article has benefited from discussions with B. Thalberg and T. N. Srinevarsen at Yale, and K. Frearson of the University of Melbourne. I am also indebted to Professor T. W. Swan and Dr. I. F. Pearce of the Australian National University and Professor R. M. Solow of the Massachusetts Institute of Technology, who made useful comments on an earlier draft. The production function I have used was employed by R. M. Solow in a talk at Yale entitled "Substitution between Capital and Labour". Professor Solow discussed this function in connection with procedures for estimating the elasticity of substitution. A similar function appears in his article, "A Contribution to the Theory of Economic Growth", *Quarterly Journal of Economics*, 1956, p. 77.

2. Solow, *op. cit.*, does consider the case in which the elasticity of substitution is two. T. W. Swan's model, "Economic Growth and Capital Accumulation", *Economic Record*, 1956, uses the Cobb-Douglas function.

3. The limitations which his simplifying assumptions produce apply also to my model.

The first assumption gives

$$\frac{dK}{dt}\cdot\frac{1}{K}=k=sY/K \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

The second ensures that labour offering for employment is always equal to the demand for labour.

The production function is

$$Y=[\gamma K^{-\beta}+\mu N^{-\beta}]^{-\frac{1}{\beta}} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

where $\beta=\dfrac{1-\sigma}{\sigma}$[4], and $\gamma=j(\beta)$,

and $\mu=h(\beta)$ so that when $\beta=0$, $\gamma+\mu=1$. It is necessary to impose this restriction on the values of γ and μ when $\beta=0$ (i.e. $\sigma=1$) in order to ensure that for all values of β the function exhibits constant returns to scale. This is ensured for values of β other than zero by raising $(\gamma K^{-\beta}+\mu N^{-\beta})$ to the power $-\dfrac{1}{\beta}$.

This function then has the elasticity of substitution as a parameter, for σ may be given any value from zero to infinity by letting β take an appropriate value in the range of infinity to minus unity.

For any function $Y=f(K,N)$ where Y, N and K are functions of t, we may write

$$\frac{dY}{dt}=\frac{\partial Y}{\partial K}\frac{dK}{dt}+\frac{\partial Y}{\partial N}\frac{dN}{dt}$$

and hence

$$\frac{dY}{dt}\frac{1}{Y}=\frac{\partial Y}{\partial K}\frac{K}{Y}\cdot\frac{dK}{dt}\frac{1}{K}+\frac{\partial Y}{\partial N}\frac{N}{Y}\cdot\frac{dN}{dt}\frac{1}{N}$$

or $\qquad y=\epsilon_K\,k+\epsilon_N\,n$

where ϵ_K and ϵ_N are the production elasticities of capital and labour, respectively.

From (2) we have

$$\epsilon_K=\gamma\left(\frac{Y}{K}\right)^{\beta}$$

and $\epsilon_N=\mu\left(\dfrac{Y}{N}\right)^{\beta}$

Thus, in terms of the rates of growth of product and factors, (2) may be written

$$y=\gamma\left(\frac{Y}{K}\right)^{\beta}k+\mu\left(\frac{Y}{N}\right)^{\beta}n \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

As we are assuming constant returns to scale, we must also have

$$y=\gamma\left(\frac{Y}{K}\right)^{\beta}k+\left[1-\gamma\left(\frac{Y}{K}\right)^{\beta}\right]n \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

Swan's model is depicted on a diagram with growth rates

4. Thus when $0\leq\sigma\leq 1$, $\infty>\beta\geq 0$;
and when $1\leq\sigma\leq\infty$, $0>\beta\geq -1$.

on the vertical and the output/capital ratio on the horizontal axis. On this diagram the labour force growth rate (assumed constant) appears as a horizontal straight line, whilst the capital growth rate $\left(k = s\frac{Y}{K}\right)$ is a straight line through the origin with slope s. The output growth line completes the system. In the Swan model it is given by $y = \epsilon_K k + (1 - \epsilon_K)n$ where ϵ_K and $1 - \epsilon_K$ are the *constant* production elasticities attached to capital and labour, respectively.

It follows from (3) that when $\sigma = 1$ $(\beta = 0)$, Swan's solution emerges as a special case, for

$$y = \gamma\left(\frac{Y}{K}\right)^0 k + \mu\left(\frac{Y}{N}\right)^0 n$$

$$\therefore y = \gamma k + \mu n.$$

This system is shown in Figure 1. A stable (*golden age*) equilibrium is seen to exist when $y = k = n$, and $\frac{Y}{K} = \frac{n}{s}$.

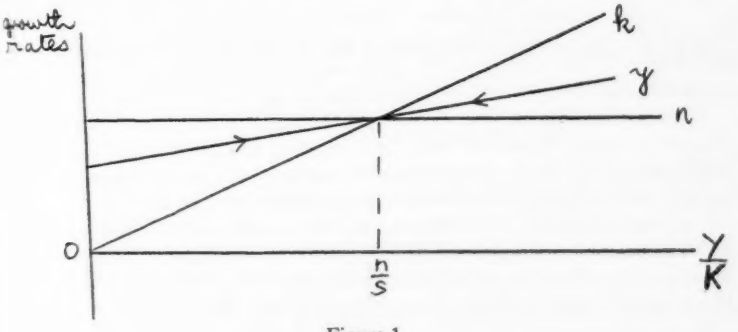

Figure 1

This equilibrium will involve the same rate of growth of income whatever the saving ratio. Moreover, as (during the process of adjustment from one equilibrium to another) " 'plausible' figuring suggests that even the impact effect of a sharp rise in the saving ratio may be of minor importance for the rate of growth"[5] saving is seen to be unimportant as an influence on the income growth rate.

We should not, however, be misled into ignoring the effect which an increase in the saving ratio will have on the *level* as distinct from the equilibrium *rate of growth* of income. A rise in the saving ratio increases output per head and hence raises the base upon which income grows.[6]

5. Swan, *op. cit.*, p. 338.
6. *Ibid.* For the Cobb-Douglas production function it may be shown that $\frac{Y}{K} = \left(\frac{Y}{N}\right)^{\frac{\epsilon K}{\epsilon N}}$, from which the above results follow.

II

Let us now allow for the full range of possible values of the elasticity of substitution by employing the production function given by equation (2).[7] This function is found to operate only for a limited range of the values of $\frac{Y}{K}$. Rearranging (2) we have

$$\frac{Y}{K} = \left[\gamma + \mu\left(\frac{K}{N}\right)^{\beta}\right]^{-\frac{1}{\beta}}$$

Now when the elasticity of substitution is greater than unity ($\beta < 0$) the output-capital ratio is seen to have a lower limit $\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$, for any value of $\frac{Y}{K}$ below this would require a capital-labour ratio greater than infinity. Thus at the limiting value of $\frac{Y}{K}$ the capital-labour ratio would have to be infinite. When the elasticity of substitution is less than unity ($\beta > 0$) there is an upper limit to $\frac{Y}{K}$ of $\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$, and at this upper limit it can be seen that the capital-labour ratio will be zero.

These limiting values of the output-capital ratio are shown in the diagrams below. Figures 2 (a), (b), (c) and (d) illustrate the growth paths which the model may take, the shape of the income growth line being based on propositions which are obtained in the appendix.

If the elasticity of substitution is less than unity Figures 2 (a) and (b) will be relevant, whilst Figures 2 (c) and (d) apply to cases in which the elasticity of substitution is greater than unity. If $\sigma < 1$, Figure 2 (a) is more likely than Figure 2 (b), the higher the output-capital ratio appropriate to a golden age $\left(\frac{n}{s}\right)$, and the lower the limiting value of the output-capital ratio $\left(\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}\right) \cdot \frac{Y}{K} = \frac{n}{s}$ will be higher the greater the population growth rate and the lower the saving ratio. If the population growth rate is higher than the saving ratio $\left(\frac{n}{s} > 1\right)$, $\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$ must also be greater than unity in order for Figure 2 (b) to be applicable. β in this case is positive, so that in order for

7. The case in which $\sigma = 0$, $\beta = \infty$ is not explicitly treated in what follows. When there is no substitution between factors we have the elements of the simplified Harrod and Joan Robinson models. There is an excellent treatment of the Harrod case in Solow *op. cit.* When $\sigma = \infty$, $\beta = -1$ the production function reduces to $Y = \gamma K + \mu N$, which may be re-written $y = \gamma\left(\frac{K}{Y}\right)k + \mu\left(\frac{N}{Y}\right)n$, and yields the same sorts of results as the more general form.

$\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$ to be greater than unity γ must be smaller than unity. On the other hand if $\frac{n}{s} < 1$ a value of γ smaller than unity will not be necessary to make Figure 2 (b) relevant.

If $\sigma > 1$, Figure 2 (d) is more likely than Figure 2 (b) the lower $\frac{n}{s}$, and the higher $\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$. Thus the greater the saving ratio and the smaller the rate of population growth the more probable will be Figure 2 (d). If $\frac{n}{s} > 1$, $\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$ must be greater than unity. This would require (with $\beta < 0$) a value of γ greater than unity. With $\frac{n}{s} < 1$, γ need not be greater than unity in order to ensure that Figure 2 (d) applies.

Our knowledge of the values of some of these parameters does not help us to make a choice between these four cases. We know that usually $n < s$, but we do not know anything about the value of γ, nor about the value of σ (unless we take the fitting of Cobb-Douglas production functions to suggest that it is in the neighbourhood of unity). Even if we did know the value of σ it would still be necessary to know γ before we could choose between Figures 2 (a) and (b) ($\sigma < 1$), and Figures 2 (c) and (d) ($\sigma > 1$).

Before we examine each of these behaviour paths it is useful to look at some of the elementary propositions about growth with constant returns to scale.[8]

We have that

$$y = (1 - \epsilon_N)k + \epsilon_N n$$

for a production function subject to constant returns to scale.

$$\therefore\ y - k = \epsilon_N n - \epsilon_N k$$

$$= \epsilon_N s\left(\frac{n}{s} - \frac{Y}{K}\right) \quad \ldots\ldots\ldots\

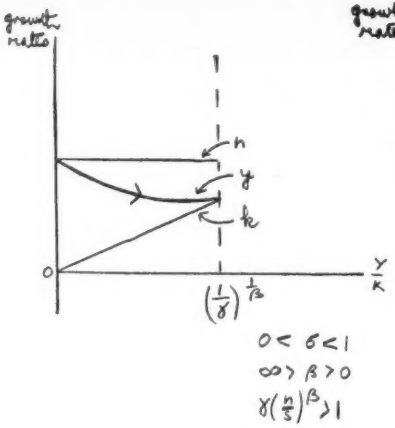

Figure 2 (a)

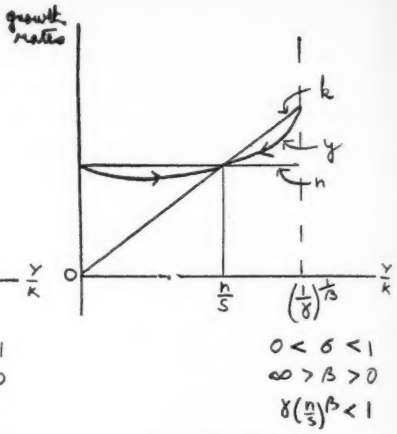

Figure 2 (b)

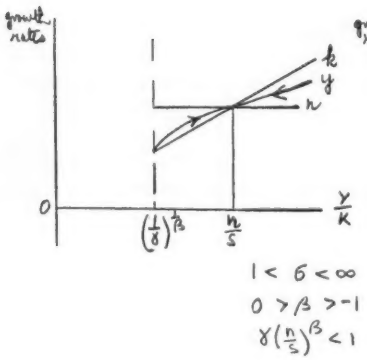

Figure 2 (c)

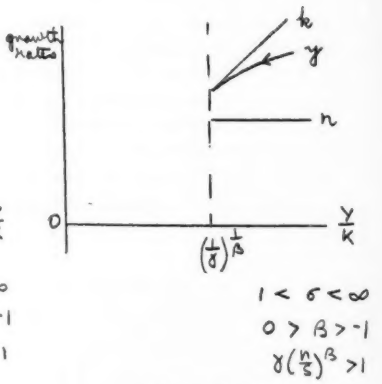

Figure 2 (d)

in operation to push the labour elasticity to (a limiting position of) zero.

The two golden age cases do not require much explanation, for the shifts in the production elasticities and the marginal productivities which bring the system to equilibrium may be inferred from a consideration of the diagrams and equations (3) and (4). These cases, of course, obey the rule that the income growth rate is, in equilibrium, uninfluenced by the saving ratio. It is the two cases in which a golden age is not possible that invite detailed examination.

As we have seen in both these cases the contribution of labour to the productive process eventually becomes negligible in the sense that after a point further increases in the labour force employed fail to increase output significantly. Figure 2 (a) ($\sigma < 1$) involves the labour

force growing more rapidly than the capital stock. Because the capital-labour ratio is continually falling, labour must be increasingly substituted for capital in order to maintain full employment of both factors. The fact that labour and capital are poor substitutes will mean that more and more labour can be employed only if the real wage (*equals* the marginal product of labour) is forced down. In this case the marginal product of labour falls more rapidly than output per head (i.e. $\frac{\partial Y}{\partial N}$ falls more rapidly than $\frac{N}{Y}$ rises) so that the labour production elasticity $\frac{\partial Y}{\partial N} \cdot \frac{N}{Y} = \mu\left(\frac{Y}{N}\right)^{\beta}$ declines. Before a golden age can be reached the capital-labour ratio has tended to zero so that the fall in the capital-output ratio comes to a halt. It follows that if, in equilibrium, the labour elasticity is zero, output (with constant returns to scale) must grow at the same rate as capital. Hence as capital grows more slowly than labour, output must grow at a less than golden age rate. Of course this equilibrium will be reached only after infinite time has elapsed, but it can be stated that in the circumstances in which Figure 2 (a) holds income will grow towards such an equilibrium, and during this process the income growth rate will always be less than the labour growth rate.

The decline in the marginal product of labour implies a fall in the real wage. Before real wages fall to zero the labour force growth rate will decline (either because population growth is reduced by a Malthusian process, or because unemployment develops). As long as some accumulation is taking place the result will be eventually to render a golden age possible (i.e. to ensure $\gamma\left(\frac{n}{s}\right)^{\beta} < 1$). However, as the labour growth rate has fallen the income growth rate will be less than the initial labour growth rate and there may be some unemployed labour at the new equilibrium.

Figure 2 (d) ($\sigma > 1$) involves income growing permanently at a higher rate than labour. This causes a rise in the capital-output ratio (for when income grows faster than employment, with constant returns to scale, capital must be growing more rapidly than income). This deepening of capital would eventually produce a golden age, except that in this case the capital-labour ratio becomes infinite before such an equilibrium can be reached. Capital and labour are good substitutes in this situation, and capital is increasingly substituted for labour as the process proceeds. The marginal product of labour is raised by this substitution, but nevertheless, as in the previous case, the labour elasticity (ϵ_N) tends to zero as the limiting value of the output-capital ratio is approached.

This case is associated with a high saving ratio and/or a low population growth and a high value of the constant attached to capital (γ). The labour production elasticity must eventually fall to zero because the community eventually has such a large stock of capital compared to the stock of labour, and this capital is a good substitute

for labour, so that a given percentage change in the labour force produces a negligible percentage change in the level of output.

All this can be looked at in terms of the shape and position of the production isoquants for different values of the elasticity of substitution. The production function (2) may be stated in the form of a relationship between $\frac{K}{Y}$ and $\frac{N}{Y}$. Thus

$$\frac{K}{Y} = \left[\frac{1}{\gamma} - \frac{\mu}{\gamma}\left(\frac{N}{Y}\right)^{-\beta}\right]^{-\frac{1}{\beta}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (6)$$

In the appendix it is shown that this relationship will involve the forms shown in Figure 3 for different values of σ.

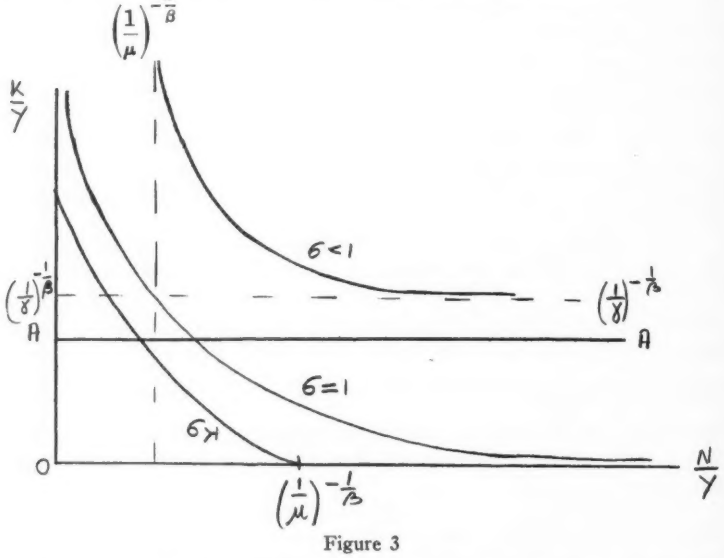

Figure 3

For any given level of income these curves illustrate the possible shapes of the production isoquants. When $\sigma < 1$ (6) will be asymptotic to positive limits with respect to both $\frac{K}{Y}$ and $\frac{N}{Y}$. When $\sigma = 1$ (6) will be asymptotic to both axes, whilst when $\sigma > 1$ (6) will cut both axes at finite values.

Now in a golden age $k = s\frac{Y}{K} = n$, so that for an economy to attain a golden age it must attain a capital-output ratio such that $\frac{K}{Y} = \frac{s}{n}$. The line AA in Figure 3 is one such equilibrium value of $\frac{K}{Y}$. It is clear that the Cobb-Douglas production function can attain any capital-output ratio, so that from any initial value growth will take place along

the curve for $\sigma = 1$ until the appropriate value of $\frac{K}{Y}$ is reached. On the other hand if $\sigma \neq 1$ it can be seen that only if the line AA cuts (6) will a golden age be possible. In Figure 3 AA is drawn so that with the curve given for $\sigma > 1$ a golden age can be reached, but in the case of the curve for $\sigma < 1$ a movement downwards and to the right can never attain the required value of $\frac{s}{n}$.

III

One interesting implication of these processes is that in some circumstances a rise in the saving ratio can achieve a permanently higher rate of growth of income. Swan had concluded that: "After a transitional phase, the influence of the saving ratio on the rate of growth is ultimately absorbed by a compensating change in the output-capital ratio."[9] However, he had not examined the possibility of the labour elasticity becoming zero, and thus had not allowed for cases such as Figure 2 (a) and (d).

Only when substitution is difficult and a golden age is achievable will it be impossible permanently to raise the rate of growth of income by raising the saving ratio.[10] As we have seen, when substitution is difficult and a golden age is not possible income will aways grow at a rate less than the golden age growth rate. An appropriate rise in the saving ratio (provided this can be achieved) will make a golden age possible, so that income can eventually grow at the same rate as labour.

In a golden age, when substitution is easy a higher income growth rate may be produced by raising the saving ratio. This means that the higher saving changes the process from the type shown by figure 2 (c) to the type shown by Figure 2 (d).

Apart from the possibility of shifting from one diagram to another it is possible in Figures 2 (a) and 2 (d) to raise the *equilibrium* growth rate by raising the saving ratio. Raising s does not influence the value of

$$\left(\frac{1}{-}\right)^{\frac{1}{\beta}}\left(\text{the limit to the values of}\ \frac{Y}{K}\right)$$

so that as the slope of the k line rises its intersection with the vertical produced from $\left(\frac{1}{-}\right)^{\frac{1}{\beta}}$ describes the locus of higher and higher equilibria.

It is worthwhile noting that in some cases "plausible" changes in the saving ratio can induce significant changes in *equilibrium* income growth.

But it is not only equilibrium that matters. In all such processes as these equilibrium is never literally reached, and when, in equilibrium, some variable such as the capital-labour ratio has to become zero or infinite it is reasonable to assume that the system will usually take

9. "Economic Growth and Capital Accumulation", p. 338.
10. $\sigma = 1$ is taken to divide "difficult" from "easy" substitution.

a very long time to get near to equilibrium. In such cases comparisons of equilibrium situations are not particularly useful. However, in the case of Figure 2 (d) knowledge of the equilibrium income growth rate does prove useful because it turns out to be the lowest possible income growth rate under those conditions. This can be seen if we substitute (1) in (4) and differentiate y with respect to $\frac{Y}{K}$.

We have then

$$\frac{dy}{d\left(\frac{Y}{K}\right)} = \gamma s(\beta + 1)\left(\frac{Y}{K}\right) - \gamma n\beta\left(\frac{Y}{K}\right)^{\beta-1}$$

which is positive when $\sigma > 1$ $(0 > \beta > -1)$. Hence y is a monotonically increasing function whose slope is a direct function of s, and the equilibrium income growth rate $y = s\left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$ is thus the lowest income growth rate which it can attain. Our conclusions about raising the saving ratio then apply *a fortiori* to Figure 2 (d).

We are not so fortunate in the case of Figure 2 (a) for the function y may or may not have a minimum in the range of attainable values of $\frac{Y}{K}$. This makes it difficult to offer a general statement about the equilibrium as compared with the non-equilibrium growth rates of income. One would need information about the time path of income in order to be satisfied that a given change in s would make a significant improvement.

Several (rather obvious) qualifications are in order. In the first place raising the saving ratio may be impossible (without lowering population growth) because no investible surplus above subsistence consumption may exist. Secondly it may be very difficult to maintain some of these growth processes and at the same time maintain full employment. In particular the marginal product of capital must become fairly low in Figure 2 (d) as the capital-labour ratio gets nearer and nearer to infinity and entrepreneurs' enthusiasm for investment would undoubtedly dwindle. In Figure 2 (a) the marginal product of labour tends to zero, in which case pressure for a higher real wage could well interfere with full employment of labour.

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Appendix

(a) To show that the elasticity of substitution (σ) is a parameter of the production function

$$Y = [\gamma K^{-\beta} + \mu N^{-\beta}]^{-\frac{1}{\beta}} \quad \ldots\ldots\ldots\

which is stable if $\gamma n^{\beta} s^{1-\beta} < s$ or $\gamma \quad ^{\beta} > 1$. That is, if the golden age falls within achievable values of the output-capital coefficient it will be stable.

Again if $\frac{Y}{K} = \left(1\right)^{\frac{1}{\beta}}$

$$\frac{dy}{d\left(\frac{Y}{K}\right)} = s(\beta + 1) - \beta n \, (\gamma^{\frac{1}{\beta}}$$

Thus this equilibrium is stable if

$$\gamma \left(\frac{n}{s}\right)^{\frac{1}{\beta}} > 1$$

that is, if it exists.

(c) As $\frac{Y}{K} \to 0$, $y \to n$ if $\beta > 0$.

This can be seen if $\frac{Y}{K} = 0$ is substituted in

$$y = \gamma s \left(\frac{Y}{K}\right)^{\beta + 1} + \left(1 - \gamma\left(\frac{Y}{K}\right)^{\beta}\right) n.$$

(d) The propositions contained in (b) and (c) help towards the construction of Figures 2 (a), (b), (c) and (d). It remains to show where the y line lies in relation to the k and n lines.

Write

$$y - k = (k - n)\left[\left(\frac{Y}{K}\right)^{\beta} - 1\right]$$

and $y - n = (k - n)\,\gamma\left(\frac{Y}{K}\right)^{\beta}$

If $\gamma\left(\frac{Y}{K}\right)^{\beta} < 1$, that is $\frac{Y}{K} < \left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$ if $\beta > 0$ and $\frac{Y}{K} > \left(\frac{1}{\gamma}\right)^{\frac{1}{\beta}}$ if $\beta < 0$,

when $k < n$, $y > k$, $y < n$.

$k > n$, $y < k$, $y > n$.

(e) The shape of the function

$$\frac{K}{Y} = \left[\frac{1}{\gamma} - \frac{\mu}{\gamma}\left(\frac{N}{Y}\right)^{-\beta}\right]^{-\frac{1}{\beta}} \quad \ldots\ldots\ldots\

$$\frac{d^2\left(\frac{K}{Y}\right)}{d\left(\frac{N}{Y}\right)^2}\cdot\frac{1}{\frac{d\left(\frac{K}{Y}\right)}{d\left(\frac{N}{Y}\right)}}=\frac{d\left(\frac{K}{Y}\right)}{d\left(\frac{N}{Y}\right)}\cdot\frac{1}{\left(\frac{K}{Y}\right)}-(\beta+1)\left(\frac{N}{Y}\right)^{-1}$$

$$-\frac{\beta\left(\frac{\mu}{\gamma}\right)\left(\frac{N}{Y}\right)^{-(\beta+1)}}{\frac{1}{\gamma}-\frac{\mu}{\gamma}\left(\frac{N}{Y}\right)^{-\beta}} \quad \ldots\ldots\ldots\ldots\ldots (5)$$

(4) is negative and (5) is negative so that $\frac{d^2\left(\frac{K}{Y}\right)}{d\left(\frac{N}{Y}\right)^2}$ is positive.

The function (3) thus has a negative slope and is convex to the origin.

When $\sigma > 1$, and $\frac{N}{Y}=0, \frac{K}{Y}=\left(\gamma\right)^{-\frac{1}{\beta}}$, and when $\sigma > 1$, and $\frac{K}{Y}=0, \frac{N}{Y}=\left(\frac{1}{\mu}\right)^{-\frac{1}{\beta}}$.

When $\sigma < 1$, and $\frac{N}{Y}=\infty, \frac{K}{Y}=\left(\frac{1}{\gamma}\right)^{-\frac{1}{\beta}}$, and when $\sigma < 1$, and $\frac{K}{Y}=\infty, \frac{N}{Y}=\left(\frac{1}{\mu}\right)^{-\frac{1}{\beta}}$.

The Cobb/Douglas function may be seen to be a special case of (1) for the case $\sigma = 1, \beta = 0, \gamma + \mu = 1$.

From (1) (appendix)

$$\log Y=\frac{-\log\left[\gamma K^{-\beta}+\mu N^{-\beta}\right]}{\beta}$$

$$\underset{\beta\to 0}{\text{Lt.}}\log Y=-\underset{\beta\to 0}{\text{Lt.}}\frac{\frac{d}{d\beta}\log\left[\gamma K^{-\beta}+\mu N^{-\beta}\right]}{\frac{d(\beta)}{d\beta}}$$

$$=-\underset{\beta\to 0}{\text{Lt.}}-\frac{\gamma K^{-\beta}\log K-\mu N^{-\beta}\log N}{\gamma K^{-\beta}+\mu N^{-\beta}}$$

$$=\gamma\log K+\mu\log N$$

Hence $Y=K^{\gamma}N^{\mu}$ ..... (6)

Now rearranging we have

$$\frac{K}{Y} = \left(\frac{N}{Y}\right)^{-\frac{\mu}{\gamma}}$$

$$\frac{d\left(\frac{K}{Y}\right)}{d\left(\frac{N}{Y}\right)} = -\frac{\mu}{\gamma}\left(\frac{N}{Y}\right)^{-\left(\frac{\mu}{\gamma}+1\right)}$$

which is less than zero, and

$$\frac{d^2\left(\frac{K}{Y}\right)}{d\left(\frac{N}{Y}\right)^2} = \left(\frac{\mu}{\gamma}\right)\left(\frac{\mu}{\gamma}+1\right)\left(\frac{N}{Y}\right)^{-\left(\frac{\mu}{\gamma}+2\right)}$$

which is positive.

It can also be seen that this function will be asymptotic to both axes.

CONTROL OF INFLATION THROUGH FISCAL POLICY: A REAPPRAISAL

Throughout the post-war years, there has been a striking division between professional and lay opinion in Australia on the merits of fiscal policy for the control of inflation. Professional economists have been virtually unanimous in their acceptance of Keynesian principles of fiscal policy which imply that a policy of budgeting for surpluses is an appropriate and effective instrument for the control of demand inflation. Articulate lay opinion, as expressed in newspaper editorials, political, business and trade union circles, have been vigorously and almost equally unanimously opposed to fiscal policy principles and measures.

At first, this opposition relied for its intellectual content on traditional conceptions of "orthodox finance", epitomized in the principle of the annually balanced budget.[1] As the Keynesian logic of fiscal policy gradually found wider understanding among laymen, an array of new arguments was developed, all designed to demonstrate that fiscal measures, especially in the form of increases in taxation, were not only ineffective in controlling inflation, but harmful in other respects and indeed "inflationary".

It need hardly be emphasized that a great deal of this lay opposition has been special pleading for taxpayers and other groups who believed their short-term interests to be threatened by fiscal policy measures. But these groups have commanded enough talent to make the most of the case. And they have been able to invoke the authority of some economists of standing—not all as eminent and eccentric as Colin Clark—to buttress this part of the case or the other.[2]

Professional economists cannot spend time tracking down every fallacy which raises its hydra head in the political arena. But the case against fiscal policy for the control of inflation has now become sufficiently elaborate to warrant a systematic reappraisal of the whole issue.[3] How far have post-war experience and theoretical analysis in Australia and elsewhere invalidated the principles of Keynesian fiscal policy? Must economists abandon, or at least seriously qualify, their former view that fiscal policy represents the most reliable and effective instrument of control of inflation in a market economy and democratic

1. E. F. Schumacher, "Public Finance—Its Relations to Full Employment" in *The Economics of Full Employment,* Oxford Institute of Statistics, Oxford, 1944, is still the best statement of the differences between orthodox and Keynesian principles of public finance.

2. Colin Clark, *Principles of Public Finance and Taxation,* Arthur Capper Moore Research Lecture, Melbourne, 1950; and "The Budget and the Basic Wage", *Economic Record,* December 1950.

3. Cf., e.g. "No Time to Increase Taxes", *Review,* Institute of Public Affairs, Victoria, April-June 1960. p. 33. For a useful general statement of professional opinion, see John F. Due, *Government Finance,* Irwin, 1959, Ch. 29.

society? To attempt to answer these questions is the object of this article.*

It will be convenient to begin with a brief restatement of the case for fiscal measures to control inflation. The problem of maintaining internal balance—full employment without inflation—is to maintain aggregate spending throughout the community at the level corresponding to full employment output (at base prices). If aggregate spending is insufficient to absorb the volume of goods and services which the economy can produce with given resources and technology, there will be under-employment. If aggregate spending is excessive, there will be inflation, in the sense that excess demand will bid up prices in the markets for factors and products. One way in which governments can control the level of aggregate spending is through budget policy. Since governments can vary their own spending and can influence private spending through changes in taxation, the appropriate budget or fiscal policy for internal balance is to aim at a balance of revenue and expenditure such that aggregate spending will run at the appropriate level. This will generally mean budgeting for a deficit in conditions of underemployment and for a surplus in conditions of general excess demand.

From the fiscal aspect, it does not matter in principle whether a given reduction in aggregate demand is achieved by cuts in government expenditure or by increases in government revenue through taxation. The choice will depend mainly on relative priorities assigned to the various objects of public and private spending, although it may also be influenced by views as to the speed with which aggregate spending can be regulated, the differential impact on different sectors or regions of the economy, and the incidental repercussions which either approach might be expected to have.

The objections that have been advanced in recent years against this approach to control of inflation can be divided into two broad groups, (i) economic and (ii) political and administrative. The most important economic objections relate to (a) the tendency of increases in taxation to fall on saving rather than spending; (b) the tendency for increases in taxation to be passed on in higher prices of factors and products; (c) adverse effects of increases in taxation on incentives, including the incentive to tax evasion and avoidance. The most important objections in the other group are (a) the political difficulties which democratic governments face in trying to cut their own expenditure or increase taxation; (b) the tendency for governments to spend the extra revenue ostensibly raised to provide a surplus; (c) constitutional and administrative obstacles to any prompt and flexible use of fiscal policy. We will examine the objections in this order.

* The author is indebted to the Institute of Public Affairs, Victoria, for provoking him into writing it, and to Mr. J. G. Head and Professors Cameron, Cochrane, Downing and Karmel for helpful criticisms of an earlier draft. None of the critics bears any responsibility for the final version.

(i) *Economic objections*

(a) *Effects on saving* Economists have always pointed out that part of any increases in taxation designed to reduce consumer spending will fall on saving. This is not, in itself, an argument against such a policy. No harm is done if some of the additional taxation is paid out of funds which would not in any case have been spent, although it means of course that more revenue has to be raised to achieve a given desired cut in private spending. The question is whether the effect on spending can be expected to be large enough to make the exercise worthwhile.

The strongest reason for pessimism on this score is the extreme reluctance of people to forgo improvements in their standard of living once achieved, the tendency to regard yesterday's luxuries as today's necessities. If this tendency is so strong that consumers will aways prefer to cut their saving before making economies in expenditure, we cannot even be sure that taxation will become effective once it has reduced individual taxpayers' net saving to zero. For nowadays, hire purchase and other forms of consumer credit enable even people without capital resources to dissave for a time. It need not be assumed, on the other hand, that family budget rigidities apply to spending only; a large proportion of personal saving nowadays is subject to contractual commitments, for mortgage and hire purchase repayment, life insurance, etc. For persons most of whose saving takes this form, a cut in disposable income is much more likely to fall on marginal spending, at least in the short run. We can only speculate on the net balance of these considerations. It is certain that part, perhaps the major part, of an increase in personal income taxation will fall on saving. It is likely that it will induce some taxpayers to borrow more (e.g. pay a smaller cash deposit) rather than do without the planned purchase of the car or washing machine. But it is also safe to assume that it will have a significant direct impact effect on consumer spending—of the order, one would guess, of at least 25 per cent of the additional revenue raised.[4] And this applies equally whether disposable income is reduced by higher rates of personal income tax (provided it is not confined to the

4. Various empirical studies have attempted to throw light on this question by estimating the proportion of total tax revenue that comes from each type of income and applying the corresponding (estimated) marginal propensity to save to each proportion. Bergson's estimates indicated that of an income tax increment equal in total to 5% of the aggregate family income of 1935/36 (U.S.A.) 61% would come out of saving, while of a flat rate additional 5% tax on all incomes only 30% would come out of saving. Goode estimated, on the basis of 1941/42 U.S. family budget data, the effect of additional company tax on personal disposable incomes via reduced dividends and found that about half would fall on saving. Kaldor, using British data and assuming a uniform percentage increase in all taxes, concluded that 27% of such a tax increase would have come out of saving. (C. S. Shoup, "Taxation and Fiscal Policy", in M. F. Millikan, *Income Stabilization for a Developing Democracy*, Yale University Press, 1953, p. 269f.) Not too much reliance can be placed on these estimates, particularly because the data for marginal propensities to consume are not necessarily valid for consumer reactions to tax increases. But they do suggest that there is no need to be too pessimistic about the direct effect on consumer spending.

highest income groups) or by higher indirect taxes on goods in reasonably inelastic demand.

Where indirect tax rates on cars and other durables are raised in such a manner that the increases are clearly intended and expected to be temporary, there may also be a helpful substitution effect: the increase in current prices which is expected to be followed by a subsequent fall is likely to induce consumers to postpone purchases. Such deferment of spending may be as significant in the short run as the direct effect of such taxes in reducing personal disposable incomes and is an important advantage of such indirect over direct taxes as instruments of fiscal policy.

So much for direct effects on consumer spending. But even that part of the extra revenue which falls on saving can be expected to have some disinflationary monetary effects in that it reduces the supply of loanable funds for private or public investment expenditure. Much, here, depends on the efficacy of monetary policy. If bank or other credit is readily available to business firms and financial intermediaries to take the place of private saving absorbed by higher taxes, the monetary effects will be small. This is one of several reasons why fiscal and monetary policies are necessarily complementary. Fiscal measures, by mopping up some private funds which would otherwise flow into the capital market, can reinforce a restrictive monetary policy. Conversely, the disinflationary effects of fiscal measures can be largely frustrated by lax or ineffective monetary controls.

(b) *Effects on money incomes* A second way in which the disinflationary objects of fiscal policy may be frustrated is through compensatory increases in factor incomes. Taxpayers naturally dislike having their disposable incomes cut by tax increases and can be assumed to do what they can to make good the cuts by increases in their pre-tax incomes. The question is what they can in fact do in this way.

In the case of direct taxes on business profits the question resolves itself into the familiar problem of the ability of firms to pass on such taxes in higher prices. The traditional answer of marginalist theory that firms fix prices so as to maximize their profits and that therefore any change in these prices to escape taxation of these profits will merely reduce their profits still further is no longer convincing. Firms do not always aim at short-run profit maximization (i.e. charge what the traffic will bear) and may be pushed by tax increases into exploiting their opportunities more fully. Where prices are fixed on the full cost (current costs plus constant percentage mark-up) principle, and taxes on profits are treated as a "cost" item, there may be an automatic tendency to pass on tax increases, even to the point of reducing gross and net profits. All this, however, does not weaken the case for disinflationary taxes on business profits nearly as much as might appear at first sight.

In the first place, the ability to pass on taxes on profits is confined to price-makers. Price-takers, in particular all primary producers and

manufacturers who compete with foreign firms in home or overseas markets, and firms in fields (such as the second-hand car market) where price competition is still strong, bear the whole of the tax increase.

Secondly, not all firms which are able to pass on tax increases will in practice do so. Not all companies use full cost pricing, and not all that do treat company tax as a cost item. Where demand proves elastic even "fixed" margins give way, if only in the form of discounts or bargain sales. Professional charges are conventionally sticky; so are many charges in service industries. At worst, increases in taxes on business profits are passed on gradually over a period of a year or two. The disinflationary impact of such increases may therefore be considerable, and it is the short-term effect that counts.

Thirdly, even if tax increases are passed on in higher prices, they achieve the primary object of a disinflationary fiscal policy for the control of demand inflation. Provided money incomes do not increase (or at least do not increase in proportion) the rise in prices reduces the real incomes of consumers and thus squeezes out excess demand. To this extent, taxes on business profits are as effective as indirect taxes. They cause a further increase in prices, but the increase is one-for-all. Provided the extra tax revenue is not spent the inflationary gap is closed. (This conclusion is not significantly impaired by the fact that governments cannot and will not allow the squeeze to cause general unemployment. Any disinflationary measures may, through their uneven impact on different sectors of the economy, cause pockets of unemployment before all excess demand has disappeared elsewhere. But this is a risk inherent in effective disinflation in any form.)

This last conclusion is, however, subject to one important qualification. If there exists a wage-price link, whether through automatic cost-of-living adjustment of wage rates or by less formal methods, any price increases are liable to re-open the inflationary gap through consequent increases in the level of money wages. This applies equally to increases in indirect taxes and to increases in taxes on profits which are passed on to consumers. The wage-price link is never perfect—not all price increases are reflected in cost-of-living indices (a point of some Machiavellian significance for sales taxes on durables not represented in the cost-of-living index regimen), not all wage rates are linked to the cost of living, and not all costs depend on wage rates. But to the extent that a wage-price link operates, indirect taxes (and to a less extent taxes on business profits) are inferior to personal income tax on wages and salaries as instruments of a disinflationary fiscal policy.

Is there any reason to fear that increases in personal income tax on wages and salaries can be "passed on" through compensatory increases in pre-tax incomes? It has been argued that such tax increases "soon result in a 'build-up' of pressure for higher wages or salaries".[5] Logs of claims before Australian industrial tribunals tend to resort to every conceivable and inconceivable argument for wage increases, but

5. "No Time to Increase Taxes", *loc. cit.*, pp. 35f.

even they have never, to the author's knowledge, cited an increase in income tax in support. There is, in fact, no evidence to suggest that income tax increases play any part in wage bargaining which, rightly or wrongly, is invariably conducted in terms of pre-tax rates. Nor must it be assumed that pressure for higher wages, even if it were intensified by increases in income taxation, would necessarily be successful. Particularly in a situation where governments show a determination to tackle an inflationary boom, employer (and court) resistance to wage demands is likely to be considerable.

(c) *Effects on incentives* The third group of economic arguments against a disinflationary fiscal policy relates to the alleged adverse effects of tax increases on incentives to save, invest, produce and economize, and to their stimulating effects on the incentive to evade and avoid taxation.

The first two require little comment. Any adverse effects that tax increases might have on incentives to save or invest might be regarded as unfortunate from the point of view of long-run growth of the economy; from the short-run point of view of a disinflationary fiscal policy, long-run effects on saving (if any) are of little relevance, while any deterrent effects on investment expenditure must be counted as a positive advantage.

The argument based on alleged adverse effects of the incentives to produce and economize also has little merit in this context. It is true that high taxation almost certainly has, on balance, some adverse effects at the margin on the willingness to put effort into earning additional income or into increasing or maintaining profits by improvements in managerial efficiency. (It must be remembered that where maintenance of a given level of disposable income is a major consideration the effect of higher taxes on these incentives may be favourable.) Such incentive effects of tax increases are probably most pronounced in the short run (they mostly wear off after a while). But at worst they represent a negligible offset on the supply side to the short-term impact of higher taxes on aggregate effective demand.

That some of the effects of tax increases will be lost through heightened endeavour by taxpayers to evade and avoid taxation is unquestionable. It is perhaps the most serious disadvantage of direct, as compared with indirect, taxes as instruments of fiscal policy. The answer, of course, is to tighten up tax law and administration as far as possible. But even with the existing scope for evasion and avoidance, no one is pessimistic enough to assume that, in a country like Australia, these defects deprive the government of more than a small fraction of the revenue yield, and thus the disinflationary effect, of tax increases.

(ii) *Political and administrative objections*

(a) *Political difficulties* By far the most serious ground for pessimism about fiscal policy for the control of inflation is the extreme reluctance of democratic governments to use it forthrightly and dras-

tically. Whether we treat this as an argument against fiscal policy or not depends fundamentally on our approach to politics: as disinterested spectators we may sit back and shrug our shoulders: "It won't work". As citizens (whether or not we also happen to be economists) who want the problem of inflation tackled, we may regard the political difficulties merely as obstacles to be overcome.

The nature and causes of these difficulties are familiar. All measures of restraint on spending are unpopular. People find it hard to understand that the community as a whole cannot buy more goods and services than it produces, that one way or the other—by relatively equitable government measures or by the haphazard and inequitable process of inflation—the coat must be cut to fit the cloth. Even when people do accept this fact, they naturally take the view that their own spending deserves a high priority, that someone else's spending should be cut. And this applies just as much to cuts in government spending and credit restrictions as to increases in taxation. Thus the public clamours in general terms for economies in government expenditure, but each group protests vigorously if the government cuts expenditure from which it would benefit. State and local authorities find it easy to enlist local public suport for attacks on the federal government for its failure to appreciate the needs of each particular area. Every group of taxpayers resents increases in taxes which fall on it. Prospective home-owners resent restrictions on housing credit, hire-purchase financiers mobilize public opinion against any attempts to restrain hire-purchase credit, wide sections of the public condemn any increase in interest rates, and so forth. Too many sections of the community hope to derive short-run benefits from inflation, too few appreciate the long-run dangers, all are too preoccupied with the task of maintaining their own share of the cake, for governments to find it easy to enlist political support for effective disinflationary measures.

Even if governments could ignore the clamour of interest groups —and as politicians they clearly cannot—they would be left with the task of making difficult decisions on social priorities: how much of the necessary cuts should fall on consumption, how much on investment? Whose consumption should be restrained most? Which categories of investment should have the highest priority—public investment in transport, power and other basic industries, or in social capital like schools and hospitals, or rural investment, or private investment in manufacturing industries, or housing?

There is really little more that needs saying on this point. What is wanted is education of the public and political courage among politicians. Much also depends on the extent to which the various sections of the community have a direct interest in control of inflation. The more groups are protected by devices such as cost-of-living adjustment, and the more learn to hedge by holding wealth in equity rather than fixed-money-value assets, the less political support can governments expect for measures to control inflation. At any rate, this is no argument against governments which *are* prepared to adopt fiscal measures.

(b) *Parkinson's Second Law* Apart from these general political obstacles to the use of fiscal policy for the control of inflation, there are widely believed to be special political difficulties in the way of effective budgeting for a surplus, difficulties recently generalized by Professor Parkinson in his Second Law: "expenditure rises to meet income". The argument is that governments are subjected from all sides to such severe pressures for increased expenditure that any attempt to budget for a surplus "becomes little more than a pious aspiration"; the mere prospect of a surplus makes resistance to claims for higher expenditure virtually impossible.[6]

There is undoubtedly a good deal in this. In the deplorable state of public ignorance about the economic issues involved, where professional economists in their efforts to enlighten the public fight a running battle against the outpourings of special pleading by sectional pressure groups, the difficulties of governments in justifying a policy of surplus budgeting are real enough. But they should not be exaggerated. The government of the United Kingdom has, in quite a number of post-war years, achieved deliberate budget surpluses of considerable dimensions for fiscal policy purposes. The American government achieved very large cash surpluses in 1947, 1948, and again in 1951, which are thought to have contributed significantly to disinflation.[7] Even the Commonwealth government of Australia proved that it can be done, in the "Horror Budget" of 1951 and the "Little Budget" of March 1956. The fact that, on these occasions, the substantial Commonwealth surplus was used to support State public works programmes did not make it useless for disinflation, since there is every reason to believe that, in its absence, the same public works expenditure would have been financed by central bank credit.

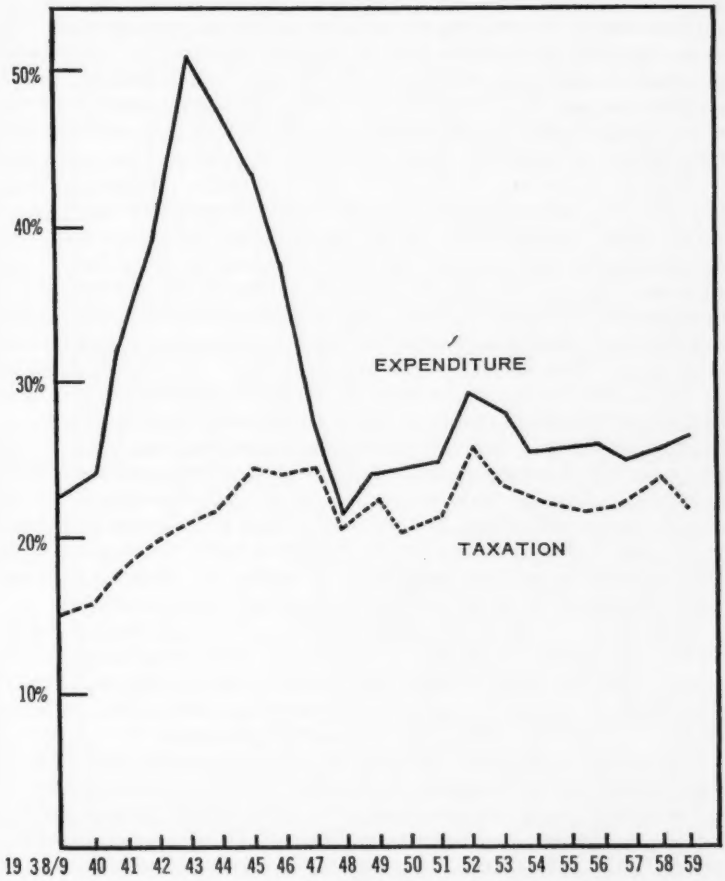
It is often asserted that governments are much more ready to secure a given budget surplus by raising taxation than by cutting expenditure, with the vague implication that behind this preference lies the hunger for power of politicians and the hunger for jobs and power of bureaucrats.[8] Even granted that politicians and public servants have such a bias, the facts do not bear out the suggestion that there has, in consequence, been a steady increase in the share of government expenditure and taxation in the national income. On the contrary, over the past decade that share has been virtually stable. From the temporary peak during the 1952 recession (when national income fell even more than public investment), the share of expenditure has fallen from 29 per cent to 26 per cent, that of taxation from 26 per cent to 22 per cent.

Over decades, there has, it is true, been a great increase in the relative size of the public sector; but it is a singularly distorted per-

6. "No Time to Increase Taxes", *loc. cit.*, pp. 33f.
7. G. Colm, "Fiscal Policy and the Federal Budget", in Millikan, *op. cit.*, p. 221f.
8. Cf., e.g. Colin Clark and H. W. Herbert, "Taxation, Production and Living Standards", in *Taxation Policy*, Australian Institute of Political Science, Sydney, 1953.

Public authority expenditure and taxation as percentage of gross national product

Australia 1938/9–1958/9



Source: White Paper on *National Income and Expenditure.*

spective which sees behind this trend, not the social pressures for more and better government services expressed by public opinion through democratic processes, but a bureaucratic conspiracy. In any case, the debate over the appropriate size of the public sector has no bearing on the validity of fiscal policy. For fiscal policy purposes, a given cut in aggregate real spending is just as useful whether it is achieved by higher taxes or lower government expenditure.

(c) *Administrative difficulties* There are, finally, the practical —constitutional and administrative—difficulties in implementing fiscal

policy flexibly and effectively. Parliamentary procedures for annual budgets, designed to ensure democratic political control of government financial policy and accounting control of financial adminstration, make fiscal policy a relatively inflexible instrument. Even half-yearly supplementary budgets appear to cause sufficient practical difficulty to be regarded as available only in extreme emergencies. Short-term economic forecasting is still beset with difficulties which hamper prompt stabilization policies of every kind.[9] Decisions to vary taxation in the annual budget are frequently subject to lags before they become effective. While, in Australia, changes in indirect tax rates can generally be made operative on the day after announcement, changes in direct tax rates on business profits do not reduce funds available until up to a year later (though they may in the meantime have some effect on taxation reserves and expectations) and changes in personal income tax rates on wages and salaries, though much quicker in operation since the introduction of PAYE, must usually be delayed by about two months to allow for preparation and distribution to employers of tax instalment scales. The lack of any effective taxation of capital gains in Australia constitutes a major loophole in control of consumer spending by the higher income groups in boom periods. On the side of government expenditure, cuts in real spending, unless they are very severe, are in periods of expansion and rising costs most likely to take the form merely of refusal to make money available, and this encounters no administrative difficulties. As the experience of 1952 showed, a refusal to provide increased funds for State public works becomes effective very quickly by sudden suspension of works in progress, however deplorable the effect on the ultimate costs of the works concerned.

Probably the most serious obstacle to flexible use of fiscal policy is the fact that governments will not, unless they are exceptionally courageous, take the plunge until the situation has become sufficiently critical for the public to appreciate the need for action. But this goes back to the political problem we have already discussed.

These administrative difficulties have led economists from time to time to seek ways of increasing the flexibility of fiscal policy by "built-in stabilizers" or by various devices for automatic adjustment of the budget to changes in business conditions.[10] Built-in stabilizers are useful, but in the nature of the case they can never be enough. On the expenditure side, built-in stabilizers, such as unemployment benefit and subsidies, operate in slumps but not in inflation. Progressive income tax operates equally in both directions, and from a fiscal policy point of view the steady decline in the relative importance of personal income tax in the Australian tax structure over the past decade is certainly to be regretted. But it may be that the adverse incentive effects of high marginal rates set a limit to the proportion of total revenue which it is desirable to raise by progressive income tax in the long run. As for

9. For an excellent discussion of problems of forecasting, see E. E. Hagen, "The Role of Economic Forecasting in Income Stabilization", in Millikan, *op. cit.*, Ch. 4.

10. Cf. Colm, *op. cit.*, pp. 245ff.

the various devices for automatic adjustment of tax or expenditure rates to changes in business conditions which have been suggested from time to time, they all founder on the rock of parliamentary control of financial policy which is not unreasonably regarded as an essential part of democratic politics.

(iii) *Conclusions*

What conclusions emerge?

We have seen that the economic objections to the use of fiscal policy as a short-term instrument for the control of demand inflation are very largely invalid.

It is true that part of any increase in taxation falls on saving, but provided monetary policy is reasonably effective in restraining the supply of credit, there is certain to be a substantial direct effect on consumption, and even that part which falls on saving does some good by curtailing funds available for investment (and consumer credit). To the extent that increases fall on saving, allowance can be made for this by appropriately larger tax increases to secure the required cut in real private spending.

Compensatory increases in money incomes are unlikely in the case of personal income tax on wages and salaries and, at worst, partial and gradual in the case of taxes on business profits. They do not seriously detract from the disinflationary effect of tax increases over the relevant period of a year or so. The only serious proviso to this arises from a strong wage-price link. Where such a link operates, there is a strong case, quite apart from equity considerations, for using personal income tax, rather than indirect taxes or taxes on company profits. (Where there is no strong wage-price link, temporary indirect taxes may be useful for their substitution effects, i.e. deferment of purchases.)

Tax evasion and avoidance represent a serious problem, but in a country with a reasonably efficient tax system, they can make only a marginal difference to the efficacy of short-run fiscal policy.

The two main provisos in this summary are important. The efficacy of fiscal policy depends in considerable measure on the simultaneous application of disinflationary monetary and wage policies. Unless monetary restraints are effective, much of the impact of fiscal policy on consumption may be dissipated through increased resort to consumer credit, and its effects in reducing the supply of private loanable funds for investment through expansion of credit from other sources. Similarly, any wage-price link detracts from the efficacy of fiscal policy (at least in the form of changes in indirect and company taxation) by feeding back into incomes part of any price increases that may result from fiscal measures.

The political difficulties in the way of effective fiscal policy for the control of inflation are very great. But they are basically the political difficulties of control of inflation by any measures whatever. If they are greater for fiscal than for monetary or wage policy, it is only because fiscal policy is under more direct democratic political control.

To alleviate these difficulties we need a better educated public and more courageous political leadership. Efforts by economists to expose economic fallacies on this subject may contribute a little towards meeting at least the first of these needs.

The administrative difficulties, finally, which—except in crises—prevent major changes in fiscal policy more frequently than once a year, cannot really be overcome by built-in stabilizers or devices for automatic adjustment. They eliminate fiscal policy as an instrument for month-to-month adjustment, for which monetary policy must bear the main responsibility.

The conclusion we reach is that fiscal policy represents an effective, and indeed indispensable, instrument for the control of inflation. Because of its inflexibility in the very short run, it must be complemented, for month-to-month adjustments, by monetary policy. In so far as there is a problem of cost inflation which is, in some degree, independent of demand inflation, fiscal policy must also be accompanied by appropriate wage and exchange rate policies. Even for its major job—restraint upon excessive aggregate demand in the course of inflationary booms—fiscal policy must be reinforced by disinflationary monetary and wage policies. But for this major job we can and must rely on fiscal policy as the primary weapon in our armoury.

On those who, for whatever reasons, stir up opposition to the use of fiscal policy rests the onus for suggesting, and demonstrating the superiority of, alternative policies for the control of inflation. The political difficulties of fiscal policy, as we have seen, adhere virtually in the same degree to any equally effective policies for the control of inflation. Monetary (including interest) policy is no alternative.[11] For if fiscal policy does not work because of loopholes through easy credit, monetary policy alone fails, *a fortiori*. The only alternative left is direct controls, unless indeed the opponents of fiscal policy prefer inflation itself to any practicable preventive measures.[12]

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11. As an alternative (rather than a complement) to fiscal policy, moreover, monetary policy, even if it could be shown to be equally effective, would have at least two serious disadvantages: (a) it has virtually no effect in reducing consumption (other than of durables through restraint on consumer credit) and thus cuts investment disproportionately, (b) within the field of investment it tends to discriminate against longer-term developmental investment, and housing in favour of short-term, quick-profit investment.

12. Some believe there is another alternative—"to brake back the pace of economic expansion and population increase" (*Review*, Institute of Public Affairs, Victoria, April-June 1956, p. 37). The example of Sweden and other countries which have been experiencing much the same problems as Australia, despite population stability, shows that this is not an infallible remedy. At best, it would be a miserable admission of defeat in what is, for this generation of Australians, the most important task.

MONETARY POLICY AND THE FINANCIAL INTERMEDIARIES[1]

In the past four or five years there has been a widespread questioning of the significance and importance of controlling the banking system as a part of an overall stabilization policy in an economy. The upsurge of interest in the matter followed the investigations made by R. W. Goldsmith into the role of financial intermediaries in the American economy.[2] The main finding of this study was the decline in economic importance of the commercial banking system relative to other financial institutions in the United States since 1900. Subsequent discussions about the banking system and non-banking financial intermediaries have been confined largely to the United States.[3] The tentative conclusions emerging from this continuing debate may be summarized briefly. First, the impact of monetary policy has been weakened by the faster growth of those financial institutions not subject to central banking controls. Secondly, new types of controls are needed to combat the decline in effectiveness of the central bank's present array of weapons. These amount to proposals for enforcing minimum reserve requirements on non-banking financial intermediaries. Much of the discussion comes down to saying that the orthodox monetary policy operating upon the quantity of the money supply has been undermined because the existence of non-banking financial intermediaries has permitted, to an increasing extent, a rapid increase in the velocity of circulation. In view of the developments in monetary theory over the past two decades or more, it is interesting to find such reliance upon a quantity approach when seeking explanations for recent monetary events. Emphasis upon this notion seems quite misplaced. Rather, some part of the disappointment with the effectiveness of monetary devices stems from the fashionable doctrines stressing the availability rather than the cost of credit.

1. I am grateful for comments received from Professor H. W. Arndt when preparing this paper.

2. R. W. Goldsmith, *The Share of Financial Intermediaries in the National Wealth and National Assets 1900-1949* (National Bureau of Economic Research, New York, 1954: Occasional Paper 42), and *Financial Intermediaries in the American Economy since 1900* (National Bureau of Economic Research, Princeton, 1958).

3. J. G. Gurley and E. S. Shaw, "Financial Aspects of Economic Development", *American Economic Review*, September 1955; W. L. Smith, "On the Effectiveness of Monetary Policy", *American Economic Review*, September 1956; J. W. Angell, "The Monetary Standard; Objectives and Limitations", *American Economic Review*, May 1958; J. M. Culbertson, "Intermediaries and Monetary Theory: A Criticism of the Gurley-Shaw Theory", *American Economic Review*, March 1958, and Gurley and Shaw, "Reuly", *ibid.*; J. Aschheim, "Commercial Banks and Financial Intermediaries: Fallacies and Policy Implications", *Journal of Political Economy*, February 1959. In many ways the Radcliffe Report (Cmnd 827) lies within the stream of thinking associated with a re-assessment of the monetary and financial system.

1. *Intermediaries and the velocity of circulation*

The American discussion is not without relevance to the Australian monetary and financial system. In his recent Mills Memorial Lecture, the Governor of the Reserve Bank, Dr. Coombs, said: "However, ever since 1946 there has been a persistent downward trend in the money supply expressed as a percentage of the gross national product and since 1955 this percentage has been appreciably below the pre-war level. Expressed in general terms this has meant that the banking system has been becoming a less significant element in the financing of the economy. This is not necessarily a bad thing—indeed, it is a natural development in a growing economy with its financial institutions evolving and becoming more diverse and specialized. But it does mean that to the extent that monetary policy relies upon action through the banking system it is operating in a steadily contracting field."[4]

The reason for the doubts about the strength of the monetary authorities is not difficult to find. Since 1953 the non-banking financial intermediaries have shown rapid growth in the Australian economy. Although it is necessary to think of the whole gamut of intermediaries, the spectacular growth of the hire-purchase finance companies has dominated the domestic scene. Balances outstanding on hire-purchase agreements amounted to £88 millions in June 1953 and £354 millions in June 1959. At the same time the techniques for raising funds by these specialized finance companies have altered completely the pattern of the capital market. There can be no doubt that these companies are largely responsible for the market shift in favour of fixed interest borrowings from the capital market during the past four years.[5] More recently, the new official short-term money market has shown a rapid advance. Established in February 1959, it had received loans of about £76 millions by the beginning of February 1960. Furthermore, these non-banking intermediaries are outside the jurisdiction of the Federal monetary authorities with the exception of the official money market. For this reason there is little chance of the central bank being in a position to enforce quantitative controls on the non-banking financial intermediaries in the same way as special accounts calls are now made on the banking system.

Doubts about the continued effectiveness of monetary policy are centred largely upon the quantitative techniques for controlling credit in the economy. Despite some recent queries about these alleged handicaps to monetary policy in the United States, the problem in Australia appears on the surface to be more critical.[6] In the first place, owing to the intractibility of constitutional arrangements, the Australian monetary authorities cannot have recourse to such selective devices as capital issues control and consumer credit regulation. Secondly, the scope for

4. H. C. Coombs, *Conditions of Monetary Policy in Australia*; R. C. Mills Memorial Lecture, University of Sydney.

5. See my article, "The Banking System and the New Financial Intermediaries", *The Australian Quarterly*, December 1958.

6. Aschheim, *op. cit.*, pp. 60-62 especially.

open market operations is still limited despite recent attempts to widen the range of dealers in the capital market. For these reasons quantitative methods aimed directly at the cash reserves of the banking system are of greater importance here than in some other economies.

The rise of the non-banking intermediaries gives cause for alarm as it seems to have hampered monetary policy at the very points where its usefulness is most strongly upheld. Adherents of monetary policy base their claim for it as a major regulatory device upon its suitability for curtailing inflationary developments in an economy. Yet the non-banking intermediaries provide an alternative source of funds at a time when credit restraint limits the capacity of the banking system to meet the requirements of business. Certainly the experience in Australia during the past few years points to this sort of effect. The task is to assess the extent of the decline in the effectiveness of quantitative credit restraint. But, before examination of the influence of non-banking intermediaries, some attention should be given to Dr. Coombs' statement about the falling percentage of the money supply to the gross national product. In Table I the ratio of output to money supply is estimated for three different measures of product in the Australian economy during selected years between 1938/39 and 1958/59. The first two cases show the ratio, to the money supply, of gross national product and total market supplies; both of these aggregates refer to the whole economy. The third case is restricted; it is the ratio, to the money supply, of total market supplies less public authorities' expenditure on goods and services. The reason for pursuing this approach lies in the definition on which estimates of the money supply are based. With few exceptions the calculations refer to private cash balances with the banking system, so that we should link private cash balances with supplies available to the private sector of the economy. At the very least we have an alternative method for assessing the velocity of circulation.

When the three measures of the income-velocity of circulation are analysed, some useful contrasts seem to emerge. Between 1938/39 and 1958/59, the income-velocity of circulation based upon the GNP and total market supplies has risen by 21·1 per cent and 23·6 per cent respectively. The estimate relating to the private sector of the economy is lower at 17·6 per cent. Furthermore, there is a difference in the pattern of change in the income-velocity over these years. Whereas the GNP series discloses a fairly steady rise in the velocity, apart from the sharp jump between 1949/50 and 1951/52, this is not so with the series based upon total market supplies. In the latter case, the estimates for 1951/52 are almost the same as the peak figures for the last decade. Thus the sharp decline in the money supply as a percentage of the supplies coming forward in the Australian economy is not as definite as has been claimed. There is evidence for questioning interpretations based upon a single relationship between GNP and the money supply, even though the heroic oversimplification inherent in this general approach is apparent.

TABLE I

The income-velocity of circulation in Australia, 1938/39 to 1958/59, selected years

Year	Money Supply	Gross National Product		Total Market Supplies		Total Market Supplies less Public Authority Expenditure	
				Actual	Ratio	Actual	Ratio
	(1)	(2)	(3 = 2/1)	(4)	(5 = 4/1)	(6)	(7 = 6/1)
1938/39	612	922	1·51	1062	1·74	944	1·54
1946/47	1559	1642	1·05	1932	1·24	1701	1·09
1949/50	2083	2729	1·31	3382	1·62	2947	1·41
1950/51	2473	3633	1·47	4530	1·83	3925	1·59
1951/52	2426	3869	1·59	5141	2·12	4299	1·77
1952/53	2642	4213	1·59	4889	1·85	4030	1·53
1953/54	2814	4561	1·62	5397	1·92	4572	1·62
1954/55	2898	4918	1·70	5953	2·05	5060	1·75
1955/56	2923	5321	1·82	6342	2·17	5354	1·83
1956/57	3116	5754	1·85	6666	2·14	5653	1·81
1957/58	3189	5852	1·84	6870	2·15	5818	1·82
1958/59	3353	6197	1·85	7222	2·15	6091	1·82

2. *The banking system and the intermediaries*

In this section it is assumed that funds attracted by the non-banking intermediaries were formerly held in deposits with the banking system. The straightforward approach to analysing limits to an expansion of bank credit and total deposits (the money supply) is shown by the sum of an infinite geometric progression where the common ratio is less than one. Let us write D for deposits, L for bank credit being loans, advances and investments, and r for the cash reserve ratio which might be conceived as a statutory or conventional requirement. Assuming an initial rise in bank deposits which increases trading banks' cash reserves also, we have the following limits to the expansion of the money supply and credit.

$$(1) \qquad \Delta D = a + a(1-r) + a(1-r)^2 + \ldots\ldots$$
$$= \frac{a}{r}$$

$$(2) \qquad \Delta L = a(1-r) + a(1-r)^2 + a(1-r)^3 + \ldots\ldots$$
$$= \frac{a(1-r)}{r}$$

The a represents the initial rise in reserves and deposits.

The meaning of the two expressions will be clearer if we think of a financial system where the trading banks lend actual currency to their clients rather than make book entries for advances. The initial rise in deposits also means an increase in the currency reserves of the banking system. The trading banks lend the same amount of currency less the proportion held as a cash reserve, a $(1-r)$. But this currency is then re-deposited with the trading banks to form the basis of a second round of credit expansion. But a proportion of this secondary increase

in deposits is retained as a cash reserve so that the secondary rise in bank credit is $(1-r)\ [a\ (1-r)]$, or $a\ (1-r)^2$. The expansion of bank credit must always be less than the rise in deposits.

The total rise in deposits is some multiple of the initial rise in deposits and can be shown as $D = ka$ where k is the multiplier. From (1) we get

$$k = 1/r \tag{3}$$

Similarly a credit multiplier, k′, can be obtained showing the relation between the total increase in bank credit and the rise in cash reserves. From (2) we have

$$k' = \frac{(1-r)}{r} \tag{4}$$

In the course of events, the expansion of credit leads the trading banks to make transfers to the rest of the world and the government sector of the economy. This arises because the increase in credit expands economic activity and creates additional demand for imports, as well as involving additional tax payments because of the greater activity and higher production. Thus the initial expansion of credit, $a\ (1-r)$, will not lead to the same amount of deposits as in the straightforward case illustrated in the preceding equations. Only a proportion $(1-g)$ will be returned as deposits with the banking system, a percentage of the increased credit, g, being spent on foreign requirements or government tax claims. Thus $a\ (1-r)\ (1-g)$ will be the secondary deposit and will form the basis for a further expansion of credit less the proportion withheld as a cash reserve, $(1-r)\ [a\ (1-r)\ (1-g)]$. The total increase in bank credit, L_b, becomes

$$\begin{aligned}\Delta L_b &= a\ (1-r) + a\ (1-r)^2\ (1-g) + a\ (1-r)^3\ (1-g)^2 \\ &\quad + \ldots\ldots \\ &= \frac{a\ (1-r)}{r+g-rg}\end{aligned} \tag{5}$$

The credit multiplier, k′, can then be reformulated as

$$k' = \frac{(1-r)}{r+g-rg} \tag{6}$$

Usually the impact of the non-banking intermediaries is discussed in terms of the changes in the velocity of circulation and the activating of idle balances held with the banking system; the workings of these intermediaries are seen as permitting the maintenance or expansion of effective demand without a commensurate rise in the money supply. But, apart from the proposition about a relatively greater growth of financial assets and liabilities outside, there is nothing to be said about the relationships between the banking system and the non-banking intermediaries. From the viewpoint of the individual or company seeking funds, the finance provided by the non-banking intermediary is the same form of credit as that advanced by a trading bank. But the contrast between the trading banks and the non-banking intermediaries rests heavily upon the assumption that it is only the former who are in a position to create credit. Therefore the initial amount of

deposits transferred from the banking system by private holders to the non-banking intermediaries, ΔD_t, represents the basis for a "once-for-all" change in the credit position of these intermediaries. As they must hold some cash balances, the amount of credit "created" by the non-banking intermediaries, ΔL_t, would be less than the initial deposit.

$$L_t = D_t (1 - p) \tag{7}$$

where p is the proportion held in the working cash balances or the cash reserve ratio of these intermediaries.

The expansion associated with the credit activities of the intermediaries creates additional incomes. The recipients of this additional income have the choice of how they will hold any balances accumulated out of this income, and there seems no reason why some part of this should not be returned to the non-banking intermediaries. If this is the case, one might conceive of a non-banking "credit multiplier" similar to that for the trading banks as a whole. Objections to this procedure would appear to rest, first, on the timing and, secondly, on the decision-making between the initial expansion of non-banking credit and the return of funds to the non-banking intermediary. As to the first, the difference in timing between the banking system and the non-banking intermediary seems to be one of degree; important in terms of the speed of the adjustment process but not in the final outcome. The second point, about decision-making, has more substance. The trading banks are certain to receive some part of any rise in bank credit as deposits. The only decision to be taken is whether the process of credit creation should go on or whether newly apparent factors compel the holding of higher cash reserves. With the non-banking intermediaries there is no immediate return of deposits to them. The allocation of funds will depend upon the alternative uses available for these balances. However, the reasons for the original transfer of deposits to the non-banking intermediaries might lead to the same disposition of newer funds unless, in the same way as for trading banks, more recent events cause a reassessment of liquidity requirements.[7]

Of the initial increase in non-banking credit, $\Delta D_t (1 - p)$, we might say that a proportion, $(1 - z)$, represents deposits with the banking system which are not required currently for transactions purposes and are transferred to the non-banking financial intermediaries. The equation for the expansion of "credit" by the non-banking intermediaries as well as the multiplier can be shown as

$$\begin{aligned} \Delta L_{it} &= \Delta D_t (1 - p) + \Delta D_t (1 - p)^2 (1 - z) + \ldots\ldots \\ &= \frac{\Delta D_t (1 - p)}{p + z - pz} \end{aligned} \tag{8}$$

and

$$k'_t = \frac{(1 - p)}{p + z - pz} \tag{9}$$

7. In effect the deposits with the banking system always remain with it but are constantly being reallocated between private holders, the non-banking financial intermediaries and the recipients of payments from the proceeds of the crdit advanced by the intermediaries.

The impact of the "credit" expansion by the non-banking intermediaries may involve the *trading banks* in a loss of cash reserves owing to the consequent rises in payments for imports and additional tax commitments following from the rise in transactions financed by the non-banking sector. Some non-banking intermediaries may be able to expand credit to the limit shown in equation (8) but this will involve the trading banks in meeting payments to the government and the foreign sector which are a proportion, g, of the increase in "credit" recorded by these intermediaries. We assume that this g is the same as in equation (5) for ease of arguing but it may differ if the businesses of the intermediaries are concentrated upon a few selected activities. It is in this situation that we see the central role of the trading banks in the financial system; they alone provide the basis for making payments outside the private sector of the domestic economy. The trading banks' loss of cash reserves, a', is shown as

$$(10) \qquad a' = (g)\left[\frac{\Delta D_t\,(1-p)}{p+z-pz}\right]$$

However, the analysis of "credit" expansion by non-banking intermediaries shown in equations (8) and (9) is not essential to the subsequent discussions: trading banks' cash reserves will be affected by a "once-for-all" rise in funds provided by these intermediaries. In this case the loss of cash reserves follows from equation (7) as

$$(10a) \qquad a' = (g)\,[\Delta D_t\,(1-p)]$$

If the trading banks are loaned up to the limit of their cash reserves, they will be forced to curtail their operations owing to the reduction of cash reserves. The extent of the adjustment required of the trading banks to meet this loss of reserves can be estimated from equations (6) and 10).

$$(11) \qquad \Delta L_b = k'a' = \left[\frac{(1-r)}{r+g-rg}\right](a')$$

This shows the necessary reduction in trading bank credit stemming from the loss of cash reserves.

It is now possible to gain some idea of the effects of the non-banking intermediaries upon the total amount of credit provided by the financial system. From equation (8) we have the total amount of "credit" provided by the non-banking intermediaries while equation (11) gives the consequent effects upon the level of trading bank credit. Subtracting the latter from the former we get the net credit position, L_t being total net credit.

$$(12) \qquad \Delta L_t = \left[\frac{\Delta D_t\,(1-p)}{p+z-pz}\right] - \left[\frac{(1-r)}{r+g-rg}\right]\left[g\right]\left[\frac{\Delta D_t\,(1-p)}{p+z-pz}\right]$$

$$= \left[\frac{\Delta D_t\,(1-p)}{p+z-pz}\right]\left[1-\frac{(g-rg)}{r+g-rg}\right]$$

Hence the extent of total credit expansion and the adjustment required of the trading banks depends upon the cash reserve ratio of the trading banks and the leakage factor involved in payments to the government

and foreign sectors. The higher the cash reserve ratio, the greater is the rise of total credit and the lower the necessary reduction in trading bank credit. But with a higher proportion of leakages, the trading banks are forced into a substantial curtailment of credit and so the net rise in total credit is small.

In Table II some examples are shown to illustrate the link between the banking and non-banking intermediaries. The value of $1 - z$ is deliberately kept low because of the limited acceptance of the concept of a non-banking credit multiplier. We assume an initial deposit with the non-banking intermediaries of £10 millions. With the values chosen

TABLE II

Effects of non-banking intermediaries on the trading banks and the financial system

	Non-banking financial intermediaries			Trading banking system			Financial system
	Initial deposit ΔD_t	Credit mult'r k'_t	Total credit ΔL_t	Fall in cash reserves a'	Credit mult'r k'_b	Reduction in bank credit ΔL_b	Net change in total credit $\Delta L_t - L_b$
Example 1: $1-z=0{\cdot}1$, $p=0{\cdot}1$, $r=0{\cdot}2$							
$g=0{\cdot}9$	£10m	0·99	£9·89m	£8·90m	0·87	£7·74m	+£2·15m
$9=0{\cdot}1$	£10m	0·99	£9·89m	£0·99m	2·86	£2·83m	+£7·06m
Example 2: $1-z=0{\cdot}1$, $p=0{\cdot}1$, $r=0{\cdot}3$							
$g=0{\cdot}9$	£10m	0·99	£9·89m	£8·90m	0·75	£6·70m	+£3·19m
$g=0{\cdot}1$	£10m	0·99	£9·89m	£0·99m	1·89	£1·87m	+£8·02m
Example 3: $1-z=0{\cdot}2$, $p=0{\cdot}1$, $r=0{\cdot}2$							
$g=0{\cdot}9$	£10m	1·10	£10·98m	£9·88m	0·87	£8·59m	+£2·39m
$g=0{\cdot}1$	£10m	1·10	£10·98m	£1·10m	2·86	£3·14m	+£7·84m
Example 4: $1-z=0{\cdot}2$, $p=0{\cdot}1$, $r=0{\cdot}3$							
$g=0{\cdot}9$	£10m	1·10	£10·98m	£9·88m	0·75	£7·44m	+£3·54m
$g=0{\cdot}1$	£10m	1·10	£10·98m	£1·10m	1·89	£2·08m	+£8·90m

for the parameters, we can show the effects of credit expansion by taking the range of possible values for the "leakage" variable g. This is the critical item for our purposes: it provides the link between the operations of the two types of financial intermediary. The estimates indicate the effects on the trading banks of the workings of the non-banking intermediaries. The task of estimating the leakage factor is beyond the limited range of data available: it is the marginal value which is important. However, foreign payments are known to comprise about 15 per cent of total market expenditures while government revenues and loan raisings amount to about another 20 per cent. Furthermore, the value of g will presumably rise as the economy approaches the full use of its domestic resources and demand spills over into the foreign sector.

The whole purpose of the argument is to show that the burden of the adjustment associated with an expansion of activities by non-banking intermediaries is thrust upon the trading banks. In other words, the trading banks have to accommodate themselves to credit activities outside their control. The central role of the trading banks in the financial system has two aspects. Not only are they the sole creators of demand deposits but also, as the repositories of the liquid reserves of the financial system, they bear the weight of adjustments between the private sector of the economy on the one hand and the government sector and the international economy on the other. Moreover, we can appreciate the handicaps faced by those monetary authorities relying exclusively upon quantitative methods of credit control.

It might be objected that the weight of this adjustment falls not upon the trading banks but the central bank inasmuch as it seeks to accommodate seasonal changes in the liquidity of the banking system. However, the critical situation arises when the centrel bank is trying to contain an expansionary movement in the economy. Quantitative restraints are imposed upon the trading banks with the object of limiting the availability of credit, a situation which might arise even if the trading banks have not been increasing their advances or investments. But the trading banks may be quite powerless to control their own liquidity position so long as the other credit intermediaries go unchecked.[8]

3. *The doctrine of availability and monetary policy*

Recent Australian monetary policy has been concerned with controlling the money supply. The evidence for this view can be found readily. The quotation from the Mills Memorial Lecture given in a preceding section, and other passages in that lecture, hint at monetary policy being thought of largely in terms of availability. That there exists an intimate connection between the quantity of money and the velocity of circulation seems to be discounted. Yet the difficulties of distinguishing the impact of policy on one and on the other are well known and indeed claimed as a decided advantage for the successful imple-

8. In a recent article, Mr. D. H. Merry ("The Changing Role of the Trading Banks in the Australian National Economy", *Economic Record*, April 1959) has suggested that the main reason why all the major private trading banks acquired interests in hire-purchase finance companies was the possible loss of deposits if a particular bank did not have such an affiliation. However, we do know that if one trading bank expands credit faster than other trading banks, it will suffer loss of reserves to the other banks. Should a trading bank encourage its customers to lodge deposits with an affiliated hire-purchase finance company, it would seem that the same effect could be felt. But with all the private trading banks now linked to finance companies, this effect is nullified though the Commonwealth Trading Bank would appear to be in a slightly advantageous position. This could be one factor in explaining the superior liquidity of the Commonwealth Trading Bank over the past five years.

Where the truth lies in these two views is a matter of judgement. Nevertheless, when considering Mr. Merry's view one might reasonably ask why it took so long for all the private banks to acquire hire-purchase affiliates and why they have limited themselves to only one finance company.

mentation of monetary policy.[9] One should expect a rise in velocity when attempts to restrict the quantity of credit are made.

The doctrine of availability, lying at the heart of the arguments favouring continued dependence upon the quantitative techniques of credit control, means a rejection of the persuasive role of interest rate policy. The importance of interest rate changes on the cost of any undertaking or as a determinant of the supply of funds is dismissed. Because the interest rate weapon is held to be ineffective, the strength of monetary policy is seen in terms of its capacity to effect changes in the availability of credit by quantitative controls. The change in availability is conceived as a shift in the supply schedule of credit so that the amount of credit obtained by borrowers will depend upon the elasticities of the demand and supply schedules. However, this concept seems to suggest that the monetary authorities calculate in advance the amount of credit to be taken so that the supply schedules for credit appear inelastic even if this should not be the case. The change in the rate of interest consequent upon the shift in the supply schedule will depend upon the shape of the demand curve for funds. As the monetary authorities have control of interest rates charged by trading banks, the rise in interest rates following a reduction in the availability of credit need not take place. This has the great advantage of satisfying the twin aims of restricting credit and keeping the cost of government debt programmes as low as possible.

The difficulty of the availability approach is that it breaks down for the purposes of policy determination whenever there is scope for increasing the velocity of circulation. It is certainly true that a rise in the velocity of circulation might be offset by restricting still further the credit supply; some upper limit must seemingly exist to the number of times a given money supply can be turned over in a year.[10] The extent of the adjustment to the trading banks' lending position required by a policy of offsetting might be considerable. In fact one can gauge the massive adjustment needed from an inspection of Table I; on past experience the income-velocity might rise as much as 15 per cent above that of the preceding year so that an offsetting policy would call for a roughly equivalent reduction in the money supply amounting to about one-half of total bank advances. This approach to monetary and

9. L. S. Ritter, "Income Velocity and Monetary Policy", *American Economic Review*, March 1959.

10. See Aschheim, *op. cit.*, pp. 67-70. Although there is a general acceptance of the view that there is some upper limit to the velocity of circulation, Alvin Hansen does suggest obliquely the possibility of financing a growing real income from a fixed money supply if interest rates are sufficiently high; see his *Monetary Theory and Fiscal Policy* (McGraw-Hill, 1949, Economics Handbook Series, pp. 66-68). Discussions about the upper limit to the velocity of circulation recall the recent exchange between Professors Hicks and Patinkin (*Economic Journal*, June 1957 and September 1959) about the "liquidity trap" in the familiar IS-LL diagram of the Keynesian system. Both writers appear to agree that the "liquidity trap" is a political phenomenon of monetary policy in a free enterprise economy. In similar fashion it would seem that there is no limit to the velocity of circulation if securities, or for that matter, book entries, take the place of money in the financial relationships of firms. This development would also mean the collapse of the existing monetary system.

financial policy is impossible: it would thrust an inequitable burden upon the trading banks while encouraging the growth of non-banking intermediaries still further. Essentially, the monetary authorities can only control the supply of credit provided by the trading banks. Thus where institutional and legal conditions permit the creation of new financial arrangements, there is no guarantee of a full control of the total credit in an economy. In short, reliance upon quantitative monetary weapons fosters the growth of non-banking intermediaries outside the supervision of the authorities.

The major role of interest rates in monetary policy is restored when the aim of policy includes restraint upon the activities of the non-banking intermediaries. Even the strongest supporters of the availability doctrine admit the influence of interest rates in guiding the flow of funds between safe and risk investment.[11] Low official interest rates, whether on government bonds or deposits with trading banks, will stimulate the flow of funds to more risky enterprise: holders of these funds will look elsewhere for a sufficient return to maintain incomes, and the proportion of risk premium in total interest will rise, so increasing the attractiveness of the risk investment. Whatever arguments may be advanced about the effect of interest rates upon investment and savings out of current income, their value in allocating the flow of funds is paramount. By influencing the activation of idle balances, interest rates appear indirectly as a determinant of aggregate economic activity.

An opposing view to the one expressed here would be based presumably, on the interest inelasticity of the demand for loanable funds. In such a situation it would be tantamount to saying that the uncontrolled financial sectors can always maintain their margin over administered interest rates while suffering no diminution of demand for their funds. However, should the proportion of repossessions or foreclosures in the business of finance companies rise as a result of the higher interest charges, the effect will be to reduce the profitability of the enterprise and hence lead to some curtailment of activities. If the demand for funds is interest inelastic, an assumption not a part of the availability doctrine, then all claims for monetary policy as a major regulatory device disappear and fiscal techniques become the weapon of stabilization policy.

Monetary policy in Australia over the past few years has relied upon quantitative techniques. Special accounts calls and minimum liquidity ratios have been the foundation of credit policy. The explanation of policy up to March 1956 must be sought in terms of the concept of availability and, with some modifications owing to the different approach to the government bond programme, seem also to apply to current policy determination. This appears to be the correct interpretation of statements about the declining role of the banking system in the financial arrangements of the economy.

11. R. A. Musgrave, "Credit Controls, Interest Rates, and Management of Public Debt", *Income, Employment and Public Policy* (Norton, New York, 1948, pp. 221-254).

Debt management problems have hampered overall monetary policy.[12] Support of the government bond market was terminated in March 1956 but adjustments to the structure of interest rates of the banking system have been quite small. This subordination to the needs of the government debt programme seems to extend further than interest rate policy. The minimum liquidity convention is really designed to forestall any moves by the trading banks to run down portfolios of government bills and bonds while allowing advances to the private sector to rise. Although the first try at a liquidity convention was not successful, the 14 per cent minimum ratio of liquid assets and government bonds has been maintanied since 1956. Admittedly, the pressure of restraint on the banking system has not been so much as to test thoroughly the trading banks' willingness to adhere to the agreed convention. But this convention does reduce the pressure upon the government bond market because the trading banks are not in a position to run down their portfolios as much as they might wish. The main burden of any credit restriction is thrust on the private sector while bond prices receive indirect support because the supply of bonds coming on to the capital market is curtailed.[13]

Real criticisms of interest rate policy in recent years have been its slowness in reacting to changed expectations in the private sector of the economy and the way, especially in the case of private debentures, notes and deposits, it has followed rather than led adjustments to the pattern of interest rates. If the monetary authorities are to retain their control of events, they will need a more positive approach to interest rate determination in the future. The new money market obliges them to have a clear conception of a desired interest rate structure unless the dealers in the money market are to be the siphon for restoring the cash reserves of trading banks whenever trading banks' liquidity is impaired.[14] The establishment of the official money market has meant the creation of a close link between short-term interest rates and bond prices; a situation not previously existing in the financial structure of the economy. The decision to issue seasonal treasury notes strengthens this connection. Hence, these changes in financial organizations must force the monetary authorities to take a stronger view of interest rate policy in the future.

4. *Conclusions*

The effect of the growth of non-banking financial intermediaries is to thrust the burden of adjustment to their activities upon the banking system. The trading banks suffer losses of reserves as a result of lending activities outside their control; they are therefore forced to limit the amount of credit provided by the banking system. By itself such action may only swell the fringe of unsatisfied borrowers who will turn in

12. Coombs, *op. cit.*, pp. 25-28.
13. See A. E. De Jasay, "Liquidity Ratios and Funding in Monetary Control", *Oxford Economic Papers*, October 1956.
14. See my article "The Official Short-Term Money Market", *The Australian Quarterly*, September 1959, pp. 41-44 especially.

greater numbers to other financial intermediaries. An effective control of the financial system is not possible when monetary policy is directed solely towards controlling the liquidity of the banking system. It is necessary to devise techniques affecting the liquidity of the entire financial structure. Otherwise, financial assets can always be transferred between intermediaries to circumvent the authority of the central bank.

In this situation quantitative techniques of monetary control alone cannot be successful. The notion of offsetting action by the central bank through enforced reductions of trading bank credit cannot be upheld. If persisted with, it will only lead to a whittling away of the functions assigned to the trading banks without striking effectively at the leaders in the process of monetary expansion, namely the non-banking financial intermediaries.

A more flexible interest rate policy offers the main hope for influencing the behaviour of the non-banking financial intermediaries. At the moment higher interest payments on deposits with the trading banks would hinder the easy transfer of funds to financial intermediaries. If it was left to the trading banks to determine deposit rates, they would be placed in a position where they could influence non-banking credit activities to a much greater extent than at present. Although most political parties favour the retention of moderate interest charges, this has not prevented, as Dr. Coombs rightly points out, a pattern of high interest rates emerging in that part of the private sector of the economy outside the control of the monetary authorities. The sooner this fact is recognized, the more sure will the operation of monetary policy become. Furthermore there is an immediate need for adjusting the existing pattern of interest rates. A glaring example of present disparities is between bank deposit rates and money on call with the money market. The rates for bank deposits are 2¼ per cent for three months and 2½ per cent for six months. Call money with the authorized dealers earns between 2½ and 3 per cent.

Constitutional difficulties hinder any efforts to impose some form of reserve requirement or maximum interest limit on the non-banking financial intermediaries. Although some of these powers rest with the state governments the likelihood of their co-operating with the federal authorities is not great. At the moment, therefore, direct control of such intermediaries can be ignored. Even if legislation was enacted for these powers, past experience would suggest that it would not be long before new financial organizations were developed outside the sphere of the monetary authorities. There is no alternative to a revision of attitudes towards the major role of interest rate policy. The non-banking financial intermediaries have nothing to fear and much to gain from quantitative credit regulation.

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NON-BANKING FINANCIAL INTERMEDIARIES AND THE PROCESS OF CREDIT CREATION

It is now almost an axiom in economics that trends in the supply of money do not adequately show the trend of liquidity in the economy. Account must be taken of changes in the velocity of circulation and in other forms of liquidity—especially those created by non-trading bank financial intermediaries (NFI for short).[1] Monetary authorities can to a large extent control the supply of trading bank credit but they have no direct means of controlling the expansion of NFI credit. This would not matter if the NFI acted solely as "savings brokers", i.e. as neutral and passive intermediaries in the process of saving and investment. However, for this to be true three conditions must exist:

1. The annual flow of credit emanating from NFI should never exceed the net inflow of new money from the public to these institutions;
2. The new money flowing to NFI should come directly from the savings of spending units with a surplus of current income over current expenditure; and
3. The liabilities and assets of NFI should possess approximately equal degrees of liquidity.

These three conditions are not always present. An attempt will be made here to show in what ways and by what processes NFI can theoretically influence the supply of credit, the level of interest rates and the level of economic activity.

1. We will accept Goldsmith's definition of financial intermediaries: "broadly as institutions that receive funds from other economic units as creditors, stock holders, or trustees, and use these funds to make loans to, or buy securities of, other economic units which they do not control, rather than to acquire tangible assets for operation as most non-financial enterprises do" (*The Share of Financial Intermediaries in National Wealth and National Assets 1900-1949*. Occasional Paper, 42, National Bureau of Economic Research, New York, 1954, p. 19).

In Australia the important NFI in the 1950's have been life insurance companies, private and government superannuation funds, general insurance companies, hire purchase companies, savings banks, trustee companies and, more recently, unit trusts. New types of NFI are now emerging such as land trusts, mutual funds and development banks.

The role of NFI and their impact on monetary policy is discussed in the following literature:

J. G. Gurley and E. S. Shaw, "Financial Aspects of Economical Development"—*American Economic Review*, September 1955.

J. G. Gurley and E. S. Shaw, "Financial Intermediaries and the Saving-Investment Process"—*The Journal of Finance*, May 1956.

J. M. Gilbertson, "The Gurley-Shaw Hypothesis"—*A.E.R.*, March 1958, and reply by Gurley and Shaw.

R. S. Thorn, "Non-Bank Financial Intermediaries, Credit Expansion and Monetary Policy—International Monetary Fund *Staff Papers*, November 1958.

E. A. Birnbaum, "The Growth of Financial Intermediaries as a Factor in the Effectiveness of Monetary Policy"—IMF *Staff Papers*, November 1958.

N. Aschiem, "Commercial Banks and Financial Intermediaries: Fallacies and Policy Implications"—*Journal of Political Economy*, February 1959.

Raymond W. Goldsmith, *Financial Intermediaries in the American Economy since 1900*—National Bureau of Economic Research, New York, 1958.

It is important at the start to make clear the meaning which shall be attached to certain concepts. The term "money" when used will refer to coin, currency and trading bank deposits only. The term "credit" will signify loanable funds available for direct investment in physical capital. Financial assets will be said to have "high" or "low" degrees of liquidity—meaning that they are close or distant substitutes for money.

1. *How NFI influence the aggregate demand for money*

(*a*) *NFI claims as "substitutes" for money*

The introduction of NFI into the financial system tends to increase the total volume of debt.

When NFI are absent from the system, there is (apart from trading bank liabilities) only one form of new debt—viz. "direct" debt of deficit spending units ("spenders") to surplus spending units ("savers"). When NFI are present in the system they intervene between savers and spenders, issuing their own form of debt to savers ("indirect debt") and acquiring the direct debt of spenders.

This increase in total debt will not directly affect spending or the total supply of credit unless the change in the asset portfolio of savers (indirect debt in lieu of direct debt) has some effect on either their willingness to spend or their willingness to lend, and it will only have this effect if some NFI liabilities are regarded by the saver as more liquid than some forms of direct debt. This is often the case, e.g. a savings bank offers almost a perfect substitute for money (narrowly defined); a hire purchase company (and sometimes a life office) may accept a deposit for three months or on call thus offering a safe and highly liquid liability; a unit trust agrees to buy back trust units at short notice at current market price, thus giving an illusion of high liquidity; a life assurance policy has no liquidity at all for the first two or three years but from thereon becomes increasingly liquid (though this is not as true of a superannuation policy).[2]

It can therefore be seen that the growth of NFI, in size, in number and in variety, does tend to increase the total liquidity of the public though the effect is much more immediate and more pronounced in respect of some NFI (e.g. hire purchase companies) than of others (e.g. life offices). As a result of feeling "more liquid" the public would tend to decrease their holdings of money relative to their holdings of less liquid assets such as bonds. This will increase the total supply of credit.

(*b*) *NFI and individual liquidity preference*

Most NFI have a lower demand for money than individuals (at given interest rates, incomes, etc.) because both their "precautionary"

2. The policyholder can obtain from the life office or from his trading bank a loan up to 90% of the surrender value of his policy, without thereby lessening the cover afforded by the policy. Many policyholders regard the cash surrender value (or at least the loan value) of their policies as equivalent to "cash in the bank", though they seem rather reluctant to surrender or borrow on their policies.

and "speculative" demands are lower. Consider the life offices as an example. They do not need a high precautionary liquid reserve because their net cash inflow[3] is fairly stable from year to year and their liabilities are long term and reasonably predictable. The life offices will at all times want to keep some fairly liquid assets in hand in order to be able to effect rapid changes in the composition of their portfolio whenever favourable opportunities arise. However, there are two reasons why they will try to keep speculative reserves in the form of idle cash as low as possible. First, they have substantial holdings of short-dated government securities and these are highly marketable. Secondly, the premiums charged by life offices implicitly assume that some interest will be earned on policyholders' funds; there is also strong competitive pressure to declare attractive bonus rates in order to promote sales of new business. For these and other reasons, life offices do as a rule try to keep fully invested all the time.

In view of the remarks above it is not surprising that the life offices' holdings of actual cash are of negligible importance both in relation to their total assets and in relation to the total supply of money.[4]

Similar remarks are applicable to most other NFI, though less to some (e.g. general insurance companies) than to others (e.g. building societies). It is a fair generalization that individuals have as a rule a higher liquidity preference than NFI.[5] Thus any trend towards "institutionalization" of personal saving must tend to accelerate the velocity of circulation of money and increase the supply of credit.

(c) *NFI and the public's desire for liquidity*

Even if it is assumed that NFI have the same liquidity preference as individuals and their claims are not considered more liquid than direct debt, the introduction of NFI into an economic system can still increase the total supply of credit. This can happen if the availability of NFI claims has the effect of reducing some individuals' preference for liquidity relative to illiquidity. Such individuals may not regard NFI claims as substitutes, or quasi-substitutes, for money in terms of liquidity, but may nevertheless be willing to take up some NFI claims in the place of money (hence giving up some liquidity) if they can thereby obtain a higher interest return, or if it enables them to diversify their asset portfolio or to purchase a particular service sold only by NFI.

During periods of tight money when the rates paid on bank deposits are strictly controlled, there is likely to be a widening of the

3. Total premium and investment income plus loan repayments and redemptions.

4. In 1956-7 it was less than 1% of assets and of the total money supply, and while fluctuations occurred from year to year it never exceeded 1% in the postwar period.

5. Studies in U.S.A. indicate that NFI hold the overwhelming proportion of all direct debt (see Goldsmith, *op. cit.*) and the same is probably true in Australia. Yet statistics just published by the Commonwealth Bank indicate that financial institutions hold only 7% of total bank deposits.

gap between interest rates on bank fixed deposits and the rates of return offered by NFI. If the NFI claim is a very close substitute for money, a very small change in the interest differential would be enough to attract away bank deposits. If it is a more remote substitute, the difference between bank deposit rates and the rate of return offered by NFI would have to be quite large in order to attract away bank deposits. In such circumstances, the scope for credit creation by NFI would be limited.

By successful sales promotion, the NFI can also persuade holders of idle bank deposits to diversify their asset holdings. When the act of saving is linked with the purchase of a particular commodity or service (e.g. insurance) the choice is no longer one between assets offering different degrees of liquidity but rather between assets offering different combinations of financial services. Thus a shift could occur between one type of asset and another irrespective of their relative liquidity, and without the need to alter the interest return of one relative to the other in order to induce the shift. For example, a life assurance agent could convince a person of the need for family security and thereby induce him to part with cash balances.

Undoubtedly in Australia the hire purchase companies, the unit trusts, the life offices (especially the first two) and more recently the short term money market dealers have been successful in diverting some bank deposits to themselves in the post-war period, without thereby necessarily reducing the assets of the banking system. They have to that extent increased the velocity of the circulation of money and added to the total supply of credit.

The same effect may have occurred as a result of the entry of small capitalists into the share and long term debenture market.

2. *NFI credit multiplier*

In some circumstances NFI can directly add to the total supply of credit a greater amount than they originally received from the public. These circumstances are described by Mr. R. S. Thorn as follows:[6] "If the customary cash reserve ratio of the NFI is r, then it may lend an amount equal to 1 — r times the increase in its deposits. If some of this increase in credit extended by the NFI results in a further rise in the deposits of the NFI, a further increase in credit will be possible in a manner analogous to that in which the bank multiplier operates. . . . The higher the reserve ratio and the lower the return flow, the lower will be the non-bank multiplier. . . . For a low reserve ratio and return flow, which is the most prevalent situation, the value of the non-bank multiplier will be close to unity. This means that the NFI can expand their loans and investments by an amount roughly equal to any increase in their deposit liabilities". Where, however, the return flow is fairly high, the non-bank multiplier will exceed unity. Mr. Thorn's argument implies that only the cash reserve ratio and the return flow are relevant factors to consider in assessing the credit

6. R. S. Thorn, IMF *Staff Papers*, November 1958, pp. 370, 371.

multiplier. However, it is equally relevant to consider the extent to which the return flow of deposits affects the public's liquidity preference. If, for example, the new deposit is regarded as illiquid, then the depositor would be inclined to convert some of his less liquid securities into cash thus offsetting the expansive effect of the increase in NFI credit.

It may be worth noting that the recent trend towards financial integration[7] in Australia has tended to increase the cash return flow of NFI. So too has the practice of life offices of mainly placing their investments where they see a prospect of adding to their new life assurance business.

3. *Empirical evidence*

Is there any evidence to show that the volume of claims on NFI has tended to increase relative to the volume of trading bank deposits, that personal saving has become increasingly institutionalized and that bank credit has tended to form a decreasing proportion of the total supply of credit?

Convincing evidence of these trends has been collected overseas.[8] In Australia the lack of data makes it difficult to arrive at any definite conclusions.

Such evidence as can be collected, whilst not conclusive, does tend to lend support to the view that NFI claims have grown faster than trading bank deposits and that personal saving has become more institutionalized. This evidence is shown in Tables I and II. Also Professor Arndt in his recent lecture on "The Banks and the Capital Market" compared the last five years with the pre-war years and found that the proportion of all credit provided by the trading banks fell from 56 to 21 per cent.[9]

4. *NFI and central bank credit*

By adjusting their holdings of cash and government securities relative to private loans and securities, NFI can influence indirectly the total supply of credit.

Whilst it is true that decreases in NFI holdings of actual cash can directly add to the supply of credit, evidence suggests that such changes were quantitatively insignificant as an "expansionary" factor in the post-war period; consequently we will ignore this aspect of the problem and confine ourselves to the movements in government securities.

The life offices are one of the most important of the NFI bond dealers. Yet their holdings of government securities fell from 58 per

7. i.e. closer links between different fields of finance such as life assurance, general insurance, hire purchase and unit trusts.

8. See J. S. Badger, "Funds in the Stock Market", *Harvard Business Review*, July to August 1956; R. T. Selden, "Cost Push v. Inflation", *Journal of Political Economy*, February 1959, pp. 16 to 17; Federal Reserve Bank of St. Louis, *Monthly Review*, May 1957, and Federal Reserve Bulletin, December 1957, pp. 1377, 1387.

9. Quoted by the Parliamentary Joint Committee on Constitutional Review (as reported in *Sydney Morning Herald*, 1/12/59).

TABLE I

Volume of money and selected "money substitutes in Australia (£m)

(at the end of periods shown)

	1949–50	1951–2	1953–4	1955–6	1956–7	1957–8	1958–9
Currency and notes ..	226	292	335	361	369	374	381
Deposits with cheque paying trading banks ..	1095	1242	1469	1421	1520	1518	1581
Deposits with savings banks	762	892	1010	1141	1227	1297	1391
Total reserve funds of govt. and private self-adm. superannuation funds ..	149	198	260	335	378	424	474
Life ass. reserve funds ..	429	500	589	697	761	833	912
Bldg. & inv. soc. deposits	6	5	6	6	6	6	6
Unit trusts—market value of units	3	5	13	23	31	40	50
Short-term (less than 12 months) notes, debentures and deposit liabilities of public finance companies	4	9	18	31	40	60	79 (approx.)
TOTAL	2674	3143	3700	4015	4332	4552	4874
% ratio of trading bank deposits to total	40·9	39·5	39·7	35·4	35·1	33·3	32·4

Sources: Commonwealth Bank: *Statistical Bulletins.*
Commonwealth Statistician: *Finance Bulletins.*
Jobson's Investment Digest Year Book of Public Companies, 1951, 1956, 1957.
W. L. Burke and N. Runcie, "Australian Finance Companies", *Australian Accountant,* October 1959.

TABLE II

Saving through selected NFI in Australia

(£m)

	4 income years 1946–1950	4 income years 1955–1959
(1) Saving through non-life supn. funds	54	179
(2) Saving through life ass. funds	104	272
(3) Cash inflow through unit trusts	2	22
(4) Increase in savings bank deposits	99	318
(5) Sum of 1, 2, 3 and 4	259	791
(6) Total personal saving	892	1814
Average % ratio of (5) to (6)	29%	43·6%

Sources: (1) and (2) and (6) National Income White Paper and special information from Commonwealth Statistician.
(3) Personal estimates based on various Press statements and A. R. Hall's article in *Economic Record,* Dec. 1958. These are only very approximate.
(4) Commonwealth Bank *Statistical Bulletin.*

cent of their total assets in 1948 to 27 per cent of their total assets in 1957. Again, whereas they held 11·6 per cent of the total public holdings of government securities in 1948, their share had fallen to

7 per cent by 1958. (The same movement occurred in U.S.A. but it was much more pronounced.)

TABLE III

NFI and central bank activity in Australian bond market

(£m)

Year Ended 30th June:	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
(1) Total net change in some N.F.I. holdings of govt. secs.											
Life offices	13·8	−1·1	−23·0	−11·1	5·9	8·2	−1·4	5·8	0·5	10·4	−0·3
general insurance companies	n.a.	n.a.	n.a.	n.a.	n.a.	10·4	3·8	2·0	5·3	5·6	
Private pensions and provident funds ..	n.a.	n.a.	n.a.	n.a.	n.a.	1·5	1·3	−1·6	0·9	−0·4	
Trustee offices	1	1	1	−1·5	1·3	2·7	3·7	−1·2	−2·9	−0·2	
	14·8	−0·1	−22	−12·7	7·2	22·8	7·4	5·0	3·8	14·4	
(2) Total increase in govt. secs. held by the public	94·0	106·1	83·6	204·5	171·7	178·9	127·2	134·2	126·4	−11·3	6·7
(3) Estimated change in central bank holdings of govt. secs.	−32	+83	+35	+91	+1	−30	+30	+30	−20	+20	

Sources: Commonwealth Bank *Statistical Bulletins.*
Prof. Arndt's estimates in *Economic Record,* Dec. 1958, p. 410.
Annual Report of Commonwealth Bank, 1958/9.
n.a.—not available.

Similar shifts occurred in the investment portfolios of other NFI. When NFI act in this manner they can indirectly create credit in two ways. First, the central bank, pursuing a policy of bond "price support", may find itself forced by the action of the NFI to buy more government securities, and hence inject more money into the system, than it would wish in the interest of monetary stability. The new money could then form the basis for a manifold expansion of trading bank credit. A study of the Australian post-war experience indicates that the Comonwealth Bank was often embarrassed by the activities of the NFI in the bond market. The statistics shown in Table III and numerous remarks made by the Bank Governor lend support to this view.[10]

The redistribution of NFI assets could also affect the supply of credit through its influence on government budgetary policy. A reduced annual flow of funds from NFI to the public authorities could compel the government to budget for a smaller surplus or a larger deficit than it otherwise would.

In Australia, in the post-war period, outstanding Treasury Bills increased in two inflationary years—1950/51 and 1955/6—and these were also years of low NFI support of the bond market. It is possible moreover that a larger volume of Treasury Bills would have been

10. See Annual Report of the Commonwealth Bank, 1955-6, page 18, and H. C. Coombs, "Conditions of Monetary Policy in Australia" (R. S. Mills Memorial Lecture, p. 26).

withdrawn in some years than were actually withdrawn if the change in NFI investment policy had not occurred.

The view that NFI can in this indirect fashion "cause" an increase in the supply of credit has been disputed in some circles. It is argued that a shift in NFI investment policy (away from government securities) would seldom occur, or if it occurred would not have any impact on the supply of credit, if (a) the monetary authorities pursued a "sound" anti-cyclical debt management policy and (b) the government adjusted its taxation policy and/or its expenditure policy in accordance with the availabality of funds in the loan market. If a change in NFI investment policy does increase the total supply of credit it is due to the monetary and fiscal authorities and not to the NFI.

It is, however, unrealistic to expect governments to forecast accurately the response of the loan market or to act with promptness and political courage whenever the market proves less responsive than anticipated.

The argument regarding management of the public debt needs more careful consideration. It is often alleged that the central bank policy of supporting the bond market was responsible for the flight from government securities in the post-war period. If the central bank had allowed bond prices to fall (and yields to rise) whenever the selling pressure was great the NFI would either have stopped or slowed down their shift away from government securities, because the relatively more attractive yields on government bonds and the prospect of capital losses would have acted as deterrent.

It is rather dubious, however, whether a decline in the price of government securities does necessarily deter the NFI from selling, as implied by the above argument. A rise in bond yields may merely raise the yields on other types of securities, leaving unaffected the spread between the bond yield and other available yields, and hence the net profitability of any shift out of government securities. Again whether or not a book loss is incurred as a result of such a shift is generally of no great moment to NFI; indeed in so far as a capital loss is deductible from tax it may add to the net profitability of such a switch. Finally, a fall in bond prices might conceivably have an adverse psychological effect on the managers of NFI portfolios. For example they might expect bond prices to fall further or they might, generally speaking, think a government bond a more risky and hence less desirable type of asset to hold, and this might encourage them to shift even further away from government securities.[11] Thus a withdrawal of central bank

11. Indeed the experience in U.S.A. has been that following the Treasury-Federal Reserve Accord, which ended the support policy, the sale of government securities by life insurance companies, far from decreasing, rose with the decline in prices of government bonds. In Australia the decrease in bond prices in 1951 and 1952 did temporarily reduce the selling pressure on bonds—but life offices continued to reduce their relative holdings of securities. The same thing happened in 1955-56. This response by Australian and American Life Offices can be largely attributed to the fact that, with conditions of excess demand prevailing in the private capital market, the rise in the rate on long-term government securities pushed up corporate bond and mortgage rates of borrowing.

support from a depressed bond market need not reduce and could conceivably increase selling pressure on bonds, even after the initial fall in price. Of course, when the yield differential between bonds and private securities is sufficiently reduced, the selling pressure will undoubtedly stop but in the meantime a very severe fall in bond prices may result which may have a serious demoralizing effect on the market.

Furthermore, it is not certain that the buyers of government securities sold by NFI (in a market free of central bank support) would pay for them out of current income. They may instead be encouraged by the high bond yields to dishoard, and this may well prove to be the initial result of the fall in bond prices. Again the securities sold by NFI could be taken up by trading banks. In these circumstances, the withdrawal of central bank support will not prevent a net increase in the supply of investment funds, though the secondary effects of central bank purchases on bank liquidity will be absent.

It would seem, therefore, that NFI *can* "cause" an increase in credit by altering their investment portfolio—and the monetary and fiscal authorities may be powerless to stop it.

5. *Monetary policy*

What are the policy implications of the discussion above?

Has the presence and growth of NFI in the system reduced the ability of monetary authorities to control short-term inflation?

One school of thought believes that direct quantitative controls need to be imposed on NFI similar to those imposed on the trading banks.[12]

Suggestions for controlling NFI have included the issue of special non-marketable bonds to them, the rationing of their reserves and the stipulation of reserve ratio requirements. The recent Australian Parliamentary Joint Committee on Constitutional Review proposed that the Commonwealth Government should be given powers over capital issues and hire purchase. There is, however, an opposing school of thought which believes that the NFI do not greatly (if at all) hinder anti-inflationary policy and denies the need for any special controls over them. It is claimed, in the first place, that a flexible interest rate policy (through debt management) would prevent any great mischief by life offices or other NFI. This is a view which, as we saw, needs to be qualified. It was half-heartedly defended by the Radcliffe Committee.[13] It has been carried even further by some economists in U.S.A., who want the Federal Reserve to abandon its bond support policy and to use open market operations as an important weapon of economic policy. The presence of NFI tends to aid rather than hinder the monetary authorities in their application of this weapon. This is

12. H. Gurley and E. S. Shaw, "Financial Aspects of Economic Development", *American Economic Review*, September 1955.

13. Report, pp. 134 and 208-212. The Committee also objects to any direct controls over NFI because of the administrative problems involved and because "the further growth of new financial institutions would allow the situation continually to slip from under the grip of the authorities".

because NFI tend to increase the average maturity of government debt.[14] This argument, whilst of limited applicability under Australian conditions, must carry some weight in countries with more developed capital markets.

Again, it is probably true to say that if government bonds were in the hands of individuals rather than NFI, the danger of mass shifts away from government securities would still be present, probably in a more acute form. It is surely easier to talk about the "national interest" and to apply more suasion to a few large financial institutions than to widely scattered individuals. The concentration of bonds in the hands of a few large NFI may to this extent increase the effectiveness of monetary policy.

There is another reason for doubting the seriousness of NFI interference with the application of monetary policy. The evidence in U.S.A., indicates that for much of the post-war period the growth of demand deposits largely kept up with the growth of NFI deposits.[15] It was bank fixed deposits that tended to lag behind, suggesting that the NFI were able to compete away fixed deposits but not demand deposits. Since the NFI place any deposits received by them on current account, and since the money is likely to remain on current account even after it has been lent out by the NFI, the transfer of fixed deposits to NFI, though it leaves the total deposits or assets of the banking system unchanged, alters the *distribution* between demand and fixed deposits, increasing the former relative to the latter. In the U.S.A. the commercial banks are required to keep a larger cash reserve with the Federal Reserve Banks on their demand than on their fixed deposits. Consequently the redistribution of their assets will require a reduction in their aggregate advances. This reduces the net credit created by a shift from banks to NFI.

This argument is not as applicable to Australia; here the decline of the trading banks has been reflected in recent years in both their fixed and demand deposits and anyhow the effect of a redistribution between fixed and time deposits is not nearly as certain or automatic as in U.S.A.

There is another important limitation (raised earlier) on the power of NFI to create credit. The chief way in which they compete away fixed deposits is by raising their interest rates relative to those offered by the trading banks, and there are obviously limits to this sort of process; moreover the rising interest rates tend to damp some forms of investment, thus weakening the inflationary impact of the increase in velocity of circulation.

There is a further reason why the presence of NFI is not as detrimental to monetary policy as the Gurley-Shaw hypothesis would suggest. The NFI tend to act on the velocity of circulation so as to reduce the impact of changes in money supply. This can have a favourable effect on monetary policy. "The main criticism directed against

14. See Eugene A. Birnbaum, I.M.F. *Staff Papers*, November 1958.
15. See N. Ascheim, *op. cit.*

orthodox anti-inflationary monetary policy has been that it is a very dangerous tool which cannot be used in moderation—that if effective at all, it is likely to be drastically effective, precipitating an economic collapse through a shattering of confidence in the money and capital markets. Changes in velocity, however, provide the needed safety valve, tempering and graduating the impact of monetary policy and thereby enabling the central bank to apply more (credit) restraint than it might otherwise risk. In view of the usual uncertainty regarding the actual state of business conditions it is doubtful whether the authorities would ever have the courage (or the foolhardiness) to impose any significant degree of monetary restraint were it not for the built-in shock absorber represented by variations in velocity."[16]

So long as the central bank has effective control over the money supply it can always offset undesired increases in velocity of circulation by increasing its restrictions on the quantity of money. It is true that confining restrictive action to the money supply imposes an unfair share of the burden for monetary stability on the banks. To offset this it might be desirable to take measures to increase the competitive ability of the banks by allowing them to offer higher interest rates on time deposits.

6. *Summary of conclusions*

(1) The transfer of surplus funds from the control of individuals to the control of NFI can affect the aggregate demand for money (and hence the supply of credit) in three possible ways. First, the financial assets offered by NFI may be more liquid than the financial assets (other than money) hitherto available to the public, and consequently the public's total liquidity is increased and, given its liquidity preference, its demand for money (narrowly defined) is reduced. Secondly, the NFI can influence the public's preference for "liquidity" as against "illiquidity" thereby affecting its demand for money. Thirdly, most NFI have a lower liquidity preference than individuals, and therefore at a given interest rate, income, etc., will hold less cash and short term assets in proportion to their total assets than individuals would.

(2) In so far as some NFI can "attract back" a significant proportion of their advances, they are able, provided their liabilities are regarded as quasi-substitutes for money, to induce some secondary credit creation in the same way as the trading banks.

(3) NFI can also influence the supply of credit and the level of economic activity by shifting from government securities to private securities and loans, or viceversa.

(4) The credit creating powers of NFI are limited by the following factors:
The imperfect substitutability of their claims for money;
Their generally low "cash return flow";

16. L. S. Ritter, "Income Velocity and Monetary Policy", *A.E.R.*, March 1959, p. 127.

Their limited ability to increase interest rates relative to those offered on fixed deposits;

The limited scope for downward changes in their cash reserves; and

The limited scope for bond market sales in the absence of an interest freeze.

(5) The effectiveness of monetary policy as a weapon against inflation can be, in some circumstances, weakened by the presence of NFI in the financial system, but the NFI have in one or two other respects increased the effectiveness of monetary policy; and the possible mischief that NFI can create is much more restricted than in the case of the trading banks.

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THE ANATOMY OF HIGH EMPLOYMENT*

1. *Introduction*

For almost two decades Australia has enjoyed near-full employment (with a notable lapse in 1952-53). Behind this façade of high aggregate employment profound structural changes have been occurring in the distribution of employment among employing industries. Should we conclude from this that the bogey of structural unemployment has been banished? Or is it that a rapidly expanding population soon overcomes its own mistakes? Or have we been lucky?

There are other questions which we ask with less complacency. Statistics of unemployment suggest that unemployment for the three years ending December 1959 has been much higher than the unemployment of the preceding three years.[1] Does this represent a permanent change from the previous 15 years? Is it acceptable? Is this higher level of unemployment related to structural change?

Not all these questions will be answered here. Perhaps none of them can be answered with certainty. For employment statistics, as H. P. Brown has shown us,[2] are bedevilled by apparent inconsistencies. Nevertheless the attempt to convert available employment statistics to a common censal basis reveals a striking pattern. It seems unlikely that this pattern would disappear as a result of corrections to the statistics.

2. *The growth of the work force*

The Commonwealth Census provides an over-all view of changing employment patterns as summarized in Table I.

TABLE I

Work force in industries

%

Census	*Primary*	*Manufacturing and Construction*	*Transport and Communication*	*Finance, Property, Commerce*	*Other Industries*	*Total* 000
1921	26	31	9	15	19	2,329
1933	24	32	8	17	19	2,728
1947	18	37	10	16	19	3,196
1954	15	39	9	19	18	3,702

Source: *Census Silhouette*, Commonwealth Statistician 1956.
Census reports.
Because of classification changes the figures are not strictly comparable. For details see Census reports.

* I am indebted to Laura Hodan for compiling the statistics used in this paper.

1. See Table III below for estimated June 1958 unemployment. C.E.S. statistics of persons registered for employment show a sharp rise for the 3 years 1957 to 1959.

2. *Economic Record*, 1959, p. 88.

Further light on the relationship between demand and employment is shown in Table II which was computed from a transactions table for 1955-56.[3]

TABLE II

Employee content of final demand, 1955–56

000

Final demand for the products of	*had a total employee content by industrial sector of*				*Total*
	Primary	*Factories*	*Construction*	*Services*	
Primary industries	154	34	—	135	
Factories	78	866	—	618	
Construction	8	93	299	75	
Services (incl. govt.)	3	22	—	774*	3,162

* *Including* public servants (not in government business undertakings), 412,000.

Note: (1) Working proprietors were not included in this calculation.
(2) Primary industry here includes all rural *plus* coal mining. (Other mining is included in manufacturing in this table because of the classification used in the transactions table.)

On the basis of the information in the two tables, certain broad conclusions emerge. First Table I shows that: the absolute level of employment in primary industries has been roughly constant; transport and communication as well as other services (including government) have continued to absorb a roughly unchanged proportion of the work force; manufacturing and construction has absorbed a rapidly growing proportion of the work force, as also has finance, property and commerce. While Table I leaves no doubt that manufacturing is the dynamically expanding sector, Table II emphasizes this in a dramatic way. If public servants are excluded from the services sector (i.e. subtract 412 from 774 = 362) it is estimated that rather more than one-half of employment in the services sector is in fact engaged in the handling of manufactured goods or in facilitating the operations of factories. We could make the point in another way: For every £x m. of demand for manufactures which requires 1,000 men to be employed in factories, more than another 700 employees are needed in service industries. There is little doubt that the order of magnitude of this figure is correct: in more detailed estimates we have made of consumption demand requiring 1000 employees in Australian factories, the complementary requirement of employees in services has been estimated as high as 800 persons. Thus a twofold conclusion emerges. The maintenance of high employment has depended upon the expansion of demand for manufactures. Secondly, the fact that finance, property

3. *Economic Record*, April 1960, p. 269.

and commerce has absorbed a growing proportion of the work force is almost certainly explained mainly by its function of serving the needs of the manufacturing sector.

3. *Post-war employment*

While Table I shows the broad censal movements in the work force, our primary purpose here is to examine recent structural changes in employment. For this purpose employment statistics have been compiled for June 1947, 1950, 1954 and 1958, as nearly as possible on a common censal basis. The results are shown in Table III.

The method of compiling Table III is briefly set out in this paragraph. For primary and secondary industries a detailed comparison was made of censal and *Production* bulletin statistics, on the basis of which the *Production* bulletin statistics for non-censal years were recast on to a censal basis. For construction and service industries, pay-roll tax statistics were compared with censal figures. Here the difficulty arises that the coverage of pay-roll tax returns has changed significantly—a difficulty of special relevance to the year 1958. Since 1958 is not as yet an intercensal year it is uncertain whether the assumed coverage is accurate. Estimates of unemployment on a censal basis were obtained by similar procedures, again except that 1958 was obtained as a residual because there seemed to be no reliable method of direct estimation.[4] Finally some check on these calculations is possible for the first three years by estimating work force from population statistics in quinquennial age groups. The discrepancies in Table III are not impossibly large and the discrepancy for 1958 is arbitrarily taken as the average for the two previous years. The most probable explanation of the difference in the first three years seems to be that employment in factories is underestimated.

Table III shows our various statistics to be reasonably consistent for these years. Also it will be noted that in these three periods factory employment absorbed respectively 31 per cent, 37 per cent and 31 per cent of the estimated rise in employment. Since the discussion in Section 2 leads us to expect factories to take the initiative in providing new jobs, let us now examine the growth rate of employment in

4. Adjustments to employment statistics:
Rural Figures for persons at work from *Production* bulletin are on a March basis and are adjusted upwards by about 8 per cent to a June censal basis (after undefined categories in census have been distributed).
Manufacturing In motor vehicle repairs, jewellery, dressmaking, shoe repairs, bakeries, aerated waters and a few other industries the *Production* bulletin employment data do not cover the entire industry. These figures must be written up by amounts varying from 15 per cent to 50 per cent.
Service and construction industries It appears from the census that the coverage of pay-roll tax employment figures was 81 per cent in 1947 and 79 per cent in 1954; it has been officially stated to be "approximately 77 per cent" in 1958 (*Monthly Bulletin of Employment Statistics*, May 1958). This 77 per cent has in fact been used (and 80 per cent in 1950). The method is rough since a 0·4 per cent error on tertiary employment is 13,000 persons.
Unemployment Censal unemployment is available for 1947 and 1954; it can be tentatively interpolated for 1950 using the Department of Labour's statistics on unemployed applicants awaiting placement.

TABLE III

Employment

000

June	*1947*	*1950*	*1954*	*1958*
Rural, all mining	547	549	548	541
Manufacturing	874	992	1,062	1,132
Construction	248	319	340	341
Tertiary	1,388	1,575	1,675	1,871
Unemployment	84	39	55	91†
Discrepancy	55	6	22	14*
Work force (est. from population data)	3,196	3,480	3,702	3,990

† Residual. * Average of discrepancies for 1950 and 1954.

individual manufacturing sectors. The basic information is set out in Table IV on a censal basis consistent with Table III.

It is clear from the lower half of Table IV that different industries have held the role of pacemaker in expanding employment. The period 1947 to 1950 is dominated by an upsurge in construction—employment rose 29 per cent in three years—and with this was associated a rapid rise in employment in the production of building materials, furniture and fittings. During 1950 to 1954 the electricity and gas industry showed the greatest rate of increase.[5] During 1954 to 1958, the greatest rate of increase was in the chemicals sector (where both oil refining and industrial chemicals output rose rapidly) and in printing and the manufacture of newsprint and other papers.

The upper half of Table IV shows that the consistently outstanding performer in absolute absorption of employment was engineering. It is noteworthy that in the last four-year period non-engineering factory employment rose only four thousand per annum. Reliance on engineering as the basis for the nation's full employment programme is the most outstanding single feature of the present employment situation. During the decade of the 'fifties engineering employment has expanded at a rate more than four times that in the rest of manufacturing.[6]

4. *The growth of heavy industry, 1954 to 1958*

In the period 1954 to 1958 the growth of factory employment—and hence, substantially, the growth of total employment—depended primarily on the heavy industry pacemakers: engineering, chemicals and paper. At the time of writing (April 1960) it appears that this is

5. The fall in the rate of increase in employment in this sector from 17 per cent to 5 per cent in the next period was largely due to a rise in productivity: During each of the two 4-year periods ending June 1954 and 1958 the kWh. output of electricity rose 44 per cent; gas production (employing about one-third the number in electricity) rose 21 per cent and 15 per cent respectively in the two periods.

6. From June 1950 to June 1958 engineering employment rose from 361,000 to 464,000, a rise of 29 per cent; from June 1950 to June 1958 other manufacturing employment rose from 631,000 to 668,000, a rise of 6 per cent.

TABLE IV

Increases in factory employment

000

Factory class		*1947–1950*	*1950–1954*	*1954–1958*
I, II	Bricks, cement, etc.	7·1	4·4	1·7
III	Chemicals	4·4	4·2	7·6
IV	Engineering	41·7	48·1	54·5
VI VII, VIII	Textiles	19·7	— 4·6	—12·9
IX	Food	14·3	2·9	2·4
X, XI	Woodworking	14·6	5·0	0·9
XII	Paper, printing	7·0	4·6	9·8
XVI	Gas, electricity	1·9	2·3	0·8
V, XIII, XIV, XV	Other	7·5	2·9	4·7
		118·2	69·8	69·5
% Rise in employment during period				
I, II	Bricks, cement, etc.	23	12	4
III	Chemicals	14	12	19
IV	Engineering	13	13	13
VI VII, VIII	Textiles	10	— 2	— 6
IX	Food	11	2	2
X, XI	Woodworking	24	7	1
XII	Paper, printing	13	8	15
XVI	Gas, electricity	17	17	5
V, XIII, XIV, XV	Other	21	7	10
		14	7	7

still true: during the twelve months ending December 1959 it is estimated that three-quarters of new factory employment was in these three sectors (though they employ only half the factory work force). But if the maintenance of high employment has depended upon the rapid growth of heavy industry, how has this rapid growth been sustained? This question is given even greater point when we observe that during the four years ending June 1958: the percentage increase in output of oil refineries, the radio and electrical industry and of refined copper was more than three times the percentage increase in G.N.P.; the percentage increase in output of motor vehicles, electricity, chlorine, steel ingots, and iron wire more than twice the percentage increase in G.N.P.; and the percentage increase in output of cement, ferrous pipes, sulphuric acid, chemical fertilizers and newsprint more than 50 per cent greater than the 19 per cent increase in real G.N.P.

These high growth rates of output of heavy industry have been sustained by three kinds of change: switches in final demand; changes in technology; and changes in trade.[7] The first two have resulted in a relative growth of heavy industry at the expense of other sectors (e.g. consumer durables instead of clothes) while the third has caused heavy industry to grow relatively at the expense of employment in other countries (reducing imports and expanding exports).

7. The percentages quoted in the following paragraphs are based on studies of supply and disposal of commodities for 1953-54 and 1957-58. The number and size of tables prevents their reproduction here.

Consumers for example raised their retail purchases of electrical goods by 52 per cent and household spending on electricity rose 45 per cent during the four years ending June 1958, although total retail sales rose only 28 per cent. On the other hand retail sales of clothing, drapery and footwear rose only 16 per cent, of hardware and china only 19 per cent, and of furniture and floor coverings only 20 per cent. An analysis of the broad categories of commodities for which retail statistics are available shows that during the eight years ending June 1958 retail sales of clothing-drapery-footwear, hardware-china, and furniture and floor coverings rose by much less than the average while sales of almost all other categories expanded by more than the average. (However, hardware and china held their own during the first four years.) See Table V.

TABLE V

Retail sales: ratio of percentage increase by commodity group to percentage increase in total

(Excluding motor vehicles, parts, petrol, etc.)

Retail sales of	*1949–50 to 1953–54*	*1953–54 to 1957–58*
Groceries	1·06	1·07
Butchers' meat	1·16	1·0
Other food	1·04	1·14
Beer, wine and spirits	1·16	1·18
Clothing, drapery, footwear	0·7	0·57
Hardware, china	1·31	0·68
Electrical goods	1·66	1·86
Furniture, floor coverings	0·73	0·71
Chemists, newspapers, books, all other goods	0·97	1·11

Source: Commonwealth Bureau of Census and Statistics. The last category (chemists, newspapers, books, other goods) is about one-sixth of total retail sales .
Total retail sales in the three years ending June 1950, 1954 and 1958 were £1,105m., £1,838m. and £2,344m. respectively.

Changes in technology are even more striking. During the four years ending June 1958 factory production rose 28 per cent but the volume of electricity used in factories rose 56 per cent. Similarly the electricity used by the commercial sector rose in volume by 56 per cent during this period although the volume of commerce can only have risen about 19 per cent (i.e. the estimated rise in real G.N.P.). Nor does the story end here. For during this period, in which electricity output (kWh.) rose 44 per cent, the volume of diesel and fuel oils used in generating stations rose 92 per cent. Similarly factories (other than gas and electricity stations) whose output rose 28 per cent, raised their direct purchases of fuel and diesel oils by 104 per cent. Even gasworks, whose output rose only 15 per cent, raised their fuel oil purchases by 50 per cent. It is not surprising to find that fuel and diesel oils used in Australia (after allowing for stock change) rose 68 per cent during

the four years ending June 1958. These changes are reflected in the low growth of black coal production.

Not all changes in technology can be identified with such accuracy. When we attempt to explain the 44 per cent rise in steel ingot production during the four years ended June 1958, we find that supplies absorbed by the domestic market (allowing for stock change) rose 34 per cent, the difference between these two figures being explained by a cut in imports and a rise in exports. However, the level of activity of steel users did not rise in the aggregate by as much as 34 per cent and we can explain their absorption of steel supplies (which we would have expected to be 2·82m. tons but in fact was 2·99m. tons) only on the basis that steel input coefficients rose by an average of 6 per cent. (This could be explained in various ways. H. P. Brown has pointed out that some steels may have been in short supply in 1953-54. Also during this period there was an upsurge in ferroconcrete construction: cement sales rose 32 per cent while building and construction in the aggregate rose only by about 14 per cent and the residential component actually fell.)

The third source of structural change is foreign trade. During the four years ending June 1958 exports of steel, pipes and wire rose and imports fell. Thus although home demand for steel rose only 34 per cent, steel production was successfully raised 44 per cent. Similarly home demand for ferrous pipes rose 28 per cent but production rose 32 per cent. Home demand for ferrous wire rose 25 per cent but production rose 35 per cent. This expansion of home production at the expense of foreign supplies is found in other sectors of heavy industry. Production of electrical goods rose in value more rapidly than imports. Home demand for newsprint rose by around 24 per cent but home production rose 34 per cent—while imported newsprint, which rose 19 per cent, had a smaller share of the market. Similarly home demand for other paper rose 21 per cent but production rose 63 per cent while imports fell absolutely. Major import reductions resulted from production of raw materials for plastics, tinplate and the establishment of oil refineries, while motor vehicle imports (including all parts) remained constant in real terms although new vehicle registrations rose 27 per cent.

To an important extent, then, high employment has been achieved by absorbing labour into import-competing heavy industry. This is reflected in figures for aggregate imports. Thus imports of producers' materials were almost constant in value during the year 1955-56 to 1958-59 at a monthly f.o.b. average of £34·4m. Since import prices have been rising this indicates a fall in the physical imports of producers' materials. Likewise f.o.b. merchandise imports were fairly constant at about £800m. During this three-year period real gross national product rose by around 14 per cent and factory output by some 18 per cent. This growth of the Australian economy without a commensurate rise in the import bill is of considerable importance.

5. *Conclusion*

We may attempt to sum up the foregoing discussion by suggesting that there are two constraints within which Australian economic policy must operate.

First, the maintenance of high employment necessitates that a growing proportion of the work force be absorbed into factories and into the commercial and financial sector serving those factories.

Second, there has been a persistent tendency for our real exports, appropriately reduced for any fall in the terms of trade, to grow less rapidly than real full employment G.N.P. Table VI shows how real exports in this sense have been almost *constant* (except for erratic fluctuations) over a nine-year period in which real G.N.P. has probably risen rather more than 30 per cent.

TABLE VI

Year	(1) *Value of merchandise exports f.o.b.* £m.	(2) *Import price index* 1939 = 100	(3) *Real exports adjusted for terms of trade* ((1) ÷ (2))
1948-50	605	309	1·96
1950-51	988	375	2·63
1951-52	678	421	1·61
1952-53	863	398	2·17
1953-54	828	390	2·12
1954-55	778	396	1·96
1955-56	788	406	1·94
1956-57	994	414	2·4
1957-58	828	425	1·95
1958-59	826	425	1·94

The slow growth of exports suggests that the expansion of manufacture must have a bias towards import-competing heavy industries, since significant savings in the rest of our imports (e.g. petroleum, textiles) are for different reasons very difficult to make.

The reader may care to speculate upon which industries will prove to have been the pacemakers in the four years 1958 to 1962. It is suggested that unless our policy weapons assure a high growth rate in engineering and chemicals our objectives of full employment and external equilibrium are both likely to be in jeopardy.

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HOUSING DEMAND IN AUSTRALIA, 1959–1974

Although in the short run the demand for new housing, like the demand for other goods and services, depends on a complex of factors including incomes, rents, building costs, interest rates, and the availability of finance, it seems that in the long run the main determinants are demographic. Partly through the market mechanism and partly through the pressure of public opinion on official policy, a rate of building is achieved which is sufficient to meet the requirements of new families and other household groups and at the same time provide for a continuing improvement in housing standards.

This paper is an attempt to estimate likely housing demand[1] over the period 1959-74. The factors which will be discussed here are not those which determine the year-to-year demand for new housing, but rather those which determine the net increase in the housing stock over a longer period. Five years will be taken as a convenient arbitrary interval, and an attempt will be made to estimate the likely net increase in the housing stock, on certain assumptions, in each five-year period from June 1959 to June 1974.

It will also be convenient to work in terms of the census division of the housing stock into occupied and unoccupied dwellings. Our analysis should tell us how many dwellings would be occupied, and how many unoccupied, if a census were taken in June of 1964, 1969 and 1974 (on week nights, as in recent censuses).

The demand for new dwellings is then the sum of three factors:

(a) the likely increase in occupied dwellings;
(b) the likely increase in unoccupied dwellings; and
(c) the withdrawal of dwellings from the housing stock, through demolition or conversion to other uses.

There are implicit assumptions in what follows that real incomes continue to rise at something like recent rates, that institutional finance for housing remains available in "reasonable" quantity and on "reasonable" terms, and perhaps that public authorities continue to accept some measure of responsibility for housing low income earners. The reader can decide whether these assumptions are realistic, and whether others are implied, as we go along.

Occupied dwellings

The rate of growth of demand for housing is often seen as a function of the rate of family formation, which is usually measured by the projected increase in the number of ever-married women. This is unsatisfactory for several reasons. First of all, the projections are invariably based on the size and age distribution of the female popula-

1. Housing demand, it should be noted, is here considered simply in terms of dwelling units. A considerable number of additional assumptions would be necessary to convert such estimates into estimates of investment outlays on housing.

tion, without regard to the male population. In view of the current abnormal age distribution of the Australian population this can lead to significant error. But even if the increase in ever-married women can be predicted, it is wrong to take this as a measure of housing demand. First, the number of widows in the ever-married totals is increasing fairly rapidly, and their housing habits are quite different from those of married women. Secondly, some account must be taken of the housing demand of the never-married population, which need have no relationship to the rate of family formation. Thirdly, and most important of all, account must be taken of housing demands which arise, not from changes in the size or conjugal status of the population, but from changing housing habits.

The increase in demand for occupied dwellings must be seen then as being dependent, in the main, on changes in the size, age-distribution and conjugal status of the population and on changes in the desired occupancy ratios of the populations of different conjugal status. We therefore have to estimate:

(a) the size and age-distribution of the male and female population (say 15 years of age and over) in 1964, 1969 and 1974;
(b) the likely conjugal status of our estimated population; and
(c) the proportion of persons of each conjugal status likely to be maintaining a separate household at each date.

In making these estimates it is advisable to distinguish between the two main sources of population growth, i.e. natural increase and net immigration. Separate estimates have thus been made for each of these components.

Size and age-distribution of population without immigration

If we accept the Commonwealth Statistician's estimated age-distribution of the population at June 1959, and ignore net migration after that date, we can make reasonably close estimates of the size and age-distribution of the 15-and-over population to 1974. If we apply the probabilities of survival of the 1954 Census (from the 1958 *Demography Bulletin*) to the 1959 population we get the figures in Table I. We could, of course, assume a continuation of the generally declining trend in mortality, and also adjust our figures for the different mortality experience of persons of different conjugal status, but the effect on our figures would be small.

It will be noted that in each of the five age groups from 15 to 39 (in which most marriages occur, and nearly all first marriages) males will outnumber females in each of our years, by a significant margin. However, if we compare females of age x with males of $x + 5$ we can see a potential shortage of bridegrooms—for instance, in 1969 there will be 458,000 women aged 20-24 but only 365,000 men aged 25-29. As the difference in the average age at marriage is three years, this particular comparison exaggerates the size of the potential shortage. All that is required here, however, is to establish its existence.

TABLE I

Population estimates, 1959–74 (nil immigration)

(June figures: '000)

Age	Males				Females			
	1959	*1964*	*1969*	*1974*	*1959*	*1964*	*1969*	*1974*
15-19	371	481	511	540	355	460	491	517
20-24	333	368	478	507	314	354	458	489
25-29	346	331	365	474	316	313	353	457
30-34	393	343	328	362	358	314	312	351
35-39	379	389	340	324	360	356	312	309
40 and over	1715	1880	2030	2113	1799	1978	2123	2204
15 and over	3537	3792	4052	4320	3502	3775	4049	4327

Conjugal status

To simplify our calculations we will initially divide the male and female populations into only two parts—ever-married (married; separated; divorced; widowed) and never-married. Later we shall look more closely at the components of the ever-married portion.

We have a classification of the population by age and conjugal status at the census dates. Estimates have also been made of a similar classification of the population at June 1959.

The ever-married ratios at June 1947, June 1954 and June 1959 are shown in Table II.

TABLE II

Ever-married persons per thousand, 1947–59

Age	Males			Females		
	1947	*1954*	*1959*	*1947*	*1954*	*1959*
15	–	1	–	1	2	2
16	–	2	–	7	10	14
17	2	3	2	28	37	45
18	8	9	11	77	105	114
19	23	27	34	154	203	227
20	61	67	76	264	346	353
21	132	142	155	391	490	508
22	227	241	260	503	612	631
23	327	343	392	594	703	725
24	419	438	472	668	756	782
25	508	524	557	726	802	840
26	576	581	615	770	836	865
27	637	638	667	804	856	882
28	681	688	692	820	874	895
29	722	735	728	837	882	900
30	744	762	762	847	892	911
31	774	794	776	858	899	920
32	782	807	798	867	905	923
33	805	826	810	868	911	922
34	811	835	837	871	913	928
35-39	836	860	867	874	913	931
40 and over	868	884	896	869	884	892

It is clear that the ever-married proportions were increasing strongly over this period. The exception is in the ratios for men aged 29-33, which fell between 1954 and 1959 though they still remained above the 1947 figures. The large number of single migrants of these ages would presumably be the main (and perhaps the whole) explanation for this exception.

What will happen to these ratios between 1959 and 1974? Unfortunately, they are the result of the interaction of a number of complex processes about which little is as yet known. Pending the results of an examination of these processes, which is currently in progress at the Australian National University, it is only possible at the moment to attempt to establish the limits within which the actual ratios may be expected to lie.

The main factors which have affected our choice of limits are briefly:

(a) that during the period surveyed, given the prevailing pattern of lags in the age of marriage between males and females, females will be in excess of males in the marriageable age groups; and (b) that while there may be some reasons for expecting a rise in the average age at marriage of males (e.g. through longer periods being spent securing tertiary education), these are unlikely to be sufficiently strong to prevent the continuation of the prevailing trend towards lower ages at marriage. These factors have led us to believe that it is preferable to work with the male marriage ratios rather than the female and to assume (a) that the lower limit to these is given by the 1959 figures and (b) that the upper limit is set by assuming that the male ever-married ratios will have increased by 1974 in the same proportion as they increased between 1947 and 1959.[2] The upper limit assumes in effect that the change in the balance of the sexes in the two periods counteracts the general tendency for proportionate changes of this kind to be smaller, the higher the base from which they are calculated. For the female ratios these assumptions mean a slight fall in 1974 as compared with 1959 in the case of the lower limit and an increase roughly equivalent to half the proportionate increase in the female ratios between 1947 and 1959 in the case of the upper limit.

When estimating the two ever-married populations using the above limiting assumptions it has to be recognized that the increase in ever-married females will exceed the increase in ever-married males to the extent that widows increase faster than widowers. (Female and male divorcees, excluding migration, are increasing at almost exactly the same rate and can be disregarded in this calculation.) Between 1947 and 1959 the number of widows increased by 82,000 while the number of widowers increased by only 5,000. About 12,000 of this excess was due to net migration, the "natural" excess being 65,000 or 5,400 a year. The annual excess in the number of widows over widowers has

2. As the projected period is fifteen years and that from 1947 to 1959 is twelve years the projected rate of increase is slightly lower than that which has occurred since 1947.

tended to increase. In 1950 (the first year for which we have complete information) it was 4,600; in 1958 it was 6,300. Let us assume that it goes on increasing by 200 a year. Then the increase in ever-married females rounded to the nearest thousand will exceed the increase in ever-married males by 35,000 over the period 1959-64, 40,000 over 1964-69, and 45,000 over 1969-74.

The preceding assumptions enable us to calculate alternative estimates of the conjugal status of the population fifteen years and over. The results of the calculations are presented in Table III.

TABLE III

Conjugal status of population 15 years and over, 1959–74
(nil immigration)
('000 persons)

		1959 male marriage ratios (Lower limit)			*Rising male marriage ratios (Upper limit)*		
	1959	*1964*	*1969*	*1974*	*1964*	*1969*	*1974*
			Males				
Married*	2,338	2,440	2,555	2,708	2,471	2,632	2,824
Widowed	117	120	124	128	122	127	132
Divorced	41	50	61	74	51	63	76
Ever-married	2,496	2,610	2,740	2,910	2,644	2,822	3,032
Never-married:							
15-24	613	749	860	907	740	840	879
25+	428	433	452	503	408	390	409
Total never-married	1,041	1,182	1,312	1,410	1,148	1,230	1,288
Total	3,537	3,792	4,052	4,320	3,792	4,052	4,320
			Females				
Married*	2,320	2,422	2,537	2,690	2,453	2,614	2,806
Widowed	392	430	474	523	432	477	527
Divorced	45	53	65	78	55	67	80
Ever-married	2,757	2,905	3,076	3,291	2,940	3,158	3,413
Never-married:							
15-24	455	572	631	672	538	610	630
25+	290	298	342	364	297	281	284
Total never-married	745	870	973	1,036	835	891	914
Total	3,502	3,775	4,049	4,327	3,775	4,049	4,327

* The slight difference between the male and female married populations (which include separations) is a reflection of the difference between these two populations as recorded in the 1954 Census.

Dwelling occupancy ratios

Having classified the population estimates along the above lines we must now examine the appropriate ratios to apply to these populations in order to estimate the expected demand for housing. Naturally

census experience provides the best available guide to what these ratios are likely to be. Here the long-term experience has been as follows:

TABLE IV

Percentage occupying a private dwelling, 1933–54

	1933	1954
Married	90	89
Widowed—Males		52
Females		59
Total	55†	57
Divorced—Males		32
Females		43
Total	33†	38
Never-married 25+*—Males		22
Females		23
Total	18†	23

* This age group, rather than 20+, was taken because in so far as it can be estimated from census data the apparent occupancy rate of the age group 20-24 must have been less than 5 per cent. As this age group is expected to expand rapidly over the next fifteen years its inclusion could lead to a significant over-statement of demand. As the ratios used include occupancy by never-marrieds below 25 they include provision for demand from these age groups.

† Not available separately in the 1933 Census.

Unfortunately, the known housing shortage in 1954 means that the 1954 figures do not represent desired ratios at that date. This makes it difficult to use the change in these ratios as a guide to future trends. With rising incomes and living standards and greater housing availability there is no doubt that the ratios will continue to rise. The problem is to place realistic limits on the rises.

In the case of married persons it seems unlikely that the ratio would ever exceed 95. This is so partly because there are non-private dwellings—hotels, guest-houses, caretakers' premises, etc.—which can reasonably be presumed to house one married couple each (as proprietor, manager, caretaker, etc.). These dwellings have in recent censuses been equal roughly to 1½ per cent of occupied private dwellings. In addition it is not unreasonable to assume that something like one-half of unoccupied dwellings at any particular point of time are for one reason or another temporarily vacated by their usual occupants, who are staying in a hotel, etc., or with another household. On the basis of the 1954 census this would explain the housing arrangements of another 2 per cent of married couples. Finally there is a group of married couples who either by preference or for economic reasons do not wish, or are not able at any particular point of time, to exercise effective demand for separate private dwellings. While rising real

incomes would tend to narrow this group, the expected increasing proportion of young married couples in the married population would tend to increase it. Whatever the balance of these two tendencies it seems unlikely that this section of the married population, which will not exercise effective demand for separate dwellings at any particular point of time, will be less than 1½ per cent. In the light of these three considerations it is not improbable that the total demand will not exceed 95 per cent of the married population.

In the case of the other conjugal conditions it is difficult to establish any upper limits. By and large what has been assumed here has been a continuation of the trends evident between 1933 and 1954 except that greater rates of growth have been assumed for the never-marrieds. Details of these ssumptions are given in Table V.

TABLE V

Occupancy ratios, 1959 to 1974

	1959	*1964*	*1969*	*1974*
Married	91	92	93	95
Widowed—Males	54	56	58	60
Females	60	61	63	65
Divorced—Males	34	36	38	40
Females	44	45	47	50
Never-married 25+—Males	27	29	32	35
Females	27	29	32	35

In order to isolate the effects of changing occupancy ratios it has been assumed, as an alternative, that the 1974 ratios have also been and will be the desired ratios throughout the period 1954 to 1974. In which case we get four alternative projections of demand, namely:

A. assuming 1959 male marriage proportions and 1974 occupancy ratios;
B. assuming 1959 marriage proportions and occupancy ratios increasing as in Table V;
C. assuming 1959 marriage proportion increasing until by 1974 they have increased in the same proportion as they did between 1947 and 1959 and constant (1974) occupancy ratios; and
D. assuming increasing marriage proportions as in C and increasing occupancy ratios as in B.

These have been adopted with a view to setting probable upper limits.[3] The results of these calculations are presented in Table VI, the implications of which will be considered further below.

Immigration

The projection of immigrant demand for housing is hazardous if only because there can be no firm basis for projecting future levels of

3. As this is the group in which error is most likely to occur it is worth noting that for every 1 per cent variation in the total never-marrieds ratio there would be, depending on which of the two marriage patterns discussed above prevails, a change in demand for separate dwellings of from 7,000 to 8,500 by the end of the fifteen-year period, i.e. about 0·5 per cent variation in total demand.

TABLE VI

Alternative demands for occupied dwellings, 1954–74
(nil immigration)

('000 dwellings)

	1954 Census desired		*1959*	*1964*	*1969*	*1974*
A.						
Married	1,887	2,030	2,220	2,320	2,430	2,570
Widowed Males	58	68	70	72	74	77
Females	207	228	255	278	307	342
Divorced Males	10	13	16	20	24	29
Females	16	19	23	27	33	39
Never-married Males	95	152	150	152	158	176
Females	69	104	102	104	120	127
Total	2,343	2,614	2,836	2,973	3,146	3,360
B.						
Married	1,887		2,120	2,240	2,370	2,570
Widowed Males	58		63	67	72	77
Females	207		235	262	298	342
Divorced Males	10		14	18	23	29
Females	16		20	24	31	39
Never-married Males	95		115	126	145	176
Females	69		78	86	109	127
Total	2,343		2,645	2,823	3,048	3,360
C.						
Married	1,887	2,030	2,220	2,350	2,500	2,685
Widowed Males	58	68	70	73	76	79
Females	207	228	255	282	310	343
Divorced Males	10	13	16	21	25	30
Females	16	19	23	28	34	40
Never-married Males	95	152	150	143	136	143
Females	69	104	102	104	98	99
Total	2,343	2,614	2,836	3,001	3,179	3,419
D.						
Married	1,887		2,120	2,260	2,450	2,685
Widowed Males	58		63	69	74	79
Females	207		235	263	302	343
Divorced Males	10		14	18	24	30
Females	16		20	25	32	40
Never-married Males	95		115	118	125	143
Females	69		78	86	90	99
Total	2,343		2,645	2,839	3,097	3,419

immigration. Rather arbitrarily it has been assumed here that net immigration will continue roughly at its post-war level (excluding the hump of displaced persons), i.e. at 80,000 per annum. The assumption of a constant level in the context of growing populations reflects an implicit judgment that it will be increasingly difficult to attract immigrants.

Given this major assumption, further assumptions were made about age and sex composition on the basis of the experience of 1955-8. Ageing of the population was carried out on the basis of the official life tables. As in the case of the domestic population the same alternative marriage proportions were assumed.[4] On the basis of these assumptions the conjugal condition of the immigrant population would be as indicated in Table VII.

TABLE VII

Projected immigrant population 15 years and over, by conjugal status

(80,000 p.a. from June 1959)
('000 persons)

	Males			*Females*		
	1964	*1969*	*1974*	*1964*	*1969*	*1974*
1959 male marriage ratios (lower limit)						
Married*	86	193	316	86	193	316
Widowed	1	2	3	7	13	20
Ever-married	87	195	319	93	206	336
Never-married:						
15-24	49	91	133	32	59	88
25+	21	46	73	11	23	34
Total never-married	70	137	206	43	82	122
Total	157	332	525	136	288	458
Rising male marriage ratios (upper limit)						
Married*	87	198	332	87	198	332
Widowed	1	2	3	7	13	20
Ever-married	88	200	335	94	211	352
Never-married:						
15-24	48	89	129	32	58	81
25+	21	43	61	10	19	25
Total never-married	69	132	190	42	77	106
Total	157	332	525	136	288	458

* The number of divorcees is negligible and has been included with married persons.

If the same occupancy ratios as were used for the domestic population are applied to the projected immigrant population then its demand for occupied dwellings would be as presented in Table VIII.

To our estimate of occupied private dwellings we have to add an estimate for unoccupied dwellings.

4. As the rates of marriage of male immigrants tend to be lower than those of the domestic population these assumptions clearly set upper limits. For our purposes, any possible over-statement here is expected to be balanced by an equivalent under-statement in the number of marriages of Australian females to post-1959 immigrant males, for whom no specific provision has been made.

TABLE VIII

Immigrant demand for occupied dwellings, 1964–74

(80,000 p.a. from June 1959)
('000 dwellings)

	1964	*1969*	*1974*
A.			
Married	82	183	300
Widowed Males	1	1	2
Females	4	8	13
Never-married Males	7	16	26
Females	4	8	12
Total	98	216	353
B.			
Married	79	179	300
Widowed Males	1	1	2
Females	4	8	13
Never-married Males	6	15	26
Females	3	7	12
Total	93	210	353
C.			
Married	83	188	315
Widowed Males	1	1	2
Females	4	8	13
Never-married Males	7	15	21
Females	4	7	9
Total	99	219	360
D.			
Married	80	184	315
Widowed Males	1	1	2
Females	4	8	13
Never-married Males	6	14	21
Females	3	6	9
Total	94	213	360

Unoccupied dwellings

In 1947, 47,000 or 2·4 per cent of private dwellings were unoccupied. In 1954 unoccupied dwellings amounted to 113,000 or 4·6 per cent of the total. A small part of the increase might have been due to more zealous census enumerators, but the main part must have been due to other factors. Vacant dwellings would include:

(a) Holiday dwellings, both second houses and those for letting.
(b) Permanent dwellings whose usual occupiers spent census night in a holiday dwelling.
(c) Permanent dwellings whose usual occupiers spent census night in holiday accommodation not counted as a dwelling (hotel, motel, etc.), or with relatives or friends, or abroad.
(d) Dwellings temporarily vacant because of a change (or im-

pending change) in ownership or tenancy, or because of repairs or alterations.

(e) Dilapidated dwellings not likely to be occupied.

The last three factors must be fairly important, and we can think of other reasons why dwellings might be vacant on census night. This seems to suggest that the proportion of holiday dwellings to permanent dwellings must be small—perhaps in 1954 something like 2 per cent.

This proportion seems likely to increase fairly rapidly—say to 4 per cent by 1974. If the proportion of dwellings vacant for other reasons increases by one-half, then in 1974 8 per cent of all dwellings might be unoccupied.[5] Then, to provide the 3,780,000 occupied dwellings that we have estimated would be required in 1974 (on the higher projection), we would need a housing stock of 4,110,000, of which about 330,000 would be unoccupied, about 215,000 more than in 1954. If we want to divide this increase in unoccupied dwellings between the four quinquennia we might have:

	'000	'000 p.a.
1954-59	35	7
1959-64	45	9
1964-69	60	12
1969-74	75	15

Replacement demand

As there are no reliable data on the age composition of the Australian stock of houses or on the rates of obsolescence of different types of dwellings, estimates of replacement needs must also be somewhat arbitrary. Some indication of the order of magnitude of replacement may, however, be obtained from the last three censuses. Thus, assuming that the number of sheds, huts, etc., which were not separately stated in 1947, was about the same as in 1954, i.e. 50,000,[6] then the 1954 census

5. In the U.S. about 10 per cent of all dwelling units are vacant. Details from a complete enumeration in 1950 and a sample survey in 1960 are:

	% of dwelling units vacant April 1950	1st Quarter 1960
Seasonal vacancies	2·5	2·8
Dilapidated	1·1	1·2
For rent	1·1	2·6
For sale	0·5	0·6
Rented or sold, awaiting occupancy }	1·7	0·5
Held off market }		2·6
	6·9	10·3

6. Two checks on this figure suggest that it is not unreasonable. First, if the 1954 proportions of sheds to houses by numbers of rooms are applied to the 1947 distribution of houses and sheds by rooms then it would appear that there were 49,600 sheds, etc., in 1947. Secondly, if the 1954 distribution of sheds, etc., by materials of outer walls is applied to the 1947 total distribution then the number of sheds, etc., in 1947 would have been 49,200.

data on the date of building of houses indicate that annual demolitions of houses (including conversions of houses to other uses) in the 1947-54 inter-censal period were 9,300 or 0·52 per cent per annum of the average stock of houses. This rate of demolitions is not implausible when compared with estimated European rates which range from 0·33 (Bulgaria) to 0·79 (France).[7] Nor is it implausible, given the housing shortage of the 1947-54 period, when compared with the 1933-47 Australian inter-censal rate for houses and sheds of 0·93 per cent. The 1947-54 inter-censal rate is, however, far in excess of the allowances made in the Department of National Development's *The Housing Situation* (1956) which only allowed 700 for replacements in its estimate for 1955. As no Australia-wide statistics of demolitions, etc., are collected on an annual basis there is no easily available check on the plausibility of the census figures. It should be mentioned, however, that there seems to be little scope for a loss of houses through changes in census definitions of houses and other types of private dwellings as between the two censuses.

In the absence of alternative figures it has been decided, for the purpose of the present calculation, broadly to accept the evidence of the 1954 census. Allowing for some over-statement in the inter-censal difference, we have assumed that demolitions have recently been of the order of 9,000 per annum. In the next three five-year periods it seems not unreasonable to assume that the annual rates will become 12,000; 16,000; and 18,000 respectively. These rates mean the maintenance, roughly, of a ratio of demolitions to the average housing stock of 0·5 per cent. Consequently it may well be that these estimates are on the conservative side.

Total demand

We are now in a position to present the various estimates of total demand for housing over the next fifteen years (Table IX) and to examine the implications of the different assumptions on which they are based.

As Projection A assumes constant marriage proportions and occupancy ratios the increment in demand shown in it from 1959 to 1974 measures the effect simply of the increase in population; as the only difference between A and B is the assumption of varying occupancy ratios this difference from 1959 to 1974 measures the increase in demand resulting from this assumption. Similarly, the difference between A and C measures the increment in demand arising from the assumed increase in marriage proportions over the period. Projection D differs from A by the sum of these two differences. Given the particular assumptions about increase in marriage proportions and rise in occupancy ratios that have been adopted, the sources of demand resulting from these assumptions can be readily calculated from Table IX. For the period 1959-74 they are summarized in Table X.

7. U.N. Economic and Social Council Statistical Commission Eleventh Session *Proposed Methods of Estimating Housing Needs*, January 1960, p. 39.

TABLE IX

Housing demand, 1954–74

('000 dwellings)

	Backlog at 1954	1954–9	1959–64	1964–9	1969–74
			(five-year increments)		
A. Occupied dwellings—					
Excluding immigration			137	173	214
Immigration			98	118	137
Total	271	222	235	291	351
Unoccupied dwellings		35	45	60	75
Replacements		45	60	80	90
Total	271	302	340	431	516
Annual average*		60	68	86	103
B. Occupied dwellings—					
Excluding immigration			178	225	312
Immigration			93	117	143
Total		302	271	342	455
Unoccupied dwellings		35	45	60	75
Replacements		45	60	80	90
Total	Nil	382	376	482	620
Annual average		76	75	96	124
C. Occupied dwellings—					
Excluding immigration			165	178	240
Immigration			99	120	141
Total	271	222	264	298	381
Unoccupied dwellings		35	45	60	75
Replacements		45	60	80	90
Total	271	302	369	438	546
Annual average*		60	74	88	109
D. Occupied dwellings—					
Excluding immigration			194	258	322
Immigration			94	119	147
Total		302	288	377	469
Unoccupied dwellings		35	45	60	75
Replacements		45	60	80	90
Total	Nil	382	393	517	634
Annual average		76	79	103	127

* In the case of Projections A and C we have to add to these figures an allowance to work off the backlog shown in the first column; no attempt has been made to distribute it between the quinkuennia. For further discussion of the backlog see below.

TABLE X

Sources of total increase in housing demand, 1959–74 (assumption D)

('000 dwellings)

From growth of population—		
Without immigration	524	
By immigration (80,000 per annum)	353	877
From increase in occupancy ratios		191
From higher ever-married proportions		66
Net increase in unoccupied dwellings		180
Replacements		230
		1544

This analysis of the composition of demand prompts at least three general observations. The first is that, given a method of estimation which makes use of the composition of demand by households as its basic technique, variations in future marriage behaviour can be seen to make relatively little difference to the total demand for housing. Thus an assumption which raises the increase in marriages by almost 30 per cent over what would occur given the continuation of 1959 male marriage behaviour only means a net increase in total demand for houses of 4·5 per cent. This is so partly because demand by married households at any particular point of time only accounts for 75 per cent to 80 per cent of total demand, a factor which is lowered much further, when increments are being considered, by the need for replacement and the construction of unoccupied dwellings. Furthermore, for any increase in marriages in a given population there is a loss of demand by two single households, e.g. on the present assumptions, 138,000 additional marriages (domestic and immigrant) only give rise to an additional demand for houses of 66,000. Secondly, increases in occupancy ratios of the order assumed in the calculations are a much more important source of demand than variations in marriage behaviour. To a certain extent however, as will be considered further below, this particular increase is an overstatement because the assumed occupancy ratios for 1959 are almost certainly below the "desired" levels. Finally, note should be taken of the relative importance of the demand derived from immigration.

The differing assumptions about marriage proportions and occupancy ratios have been chosen partly in order to estimate the relative contribution of different factors along the lines just indicated, but also to attempt to establish the limits within which future demand may be expected to lie. That the upper and lower projections do in fact set the limits is of course not something which can be proved but a matter of judgment. Demand might in fact be lower or higher. All that it suggested here is that each of these prospects is unlikely.

While the postulation of a range of possibilities is more satisfying to the academic conscience than a firm prediction it is much less satis-

factory for those concerned with policy issues. It is thus worthwhile to attempt to narrow still further the range of possibilities.

To do this, however, it is necessary first to examine the supply of houses over the period 1954-9. As revealed by the Bureau of Census and Statistics *Quaterly Bulletin of Building Statistics*, some 385,000 housese and flats were completed in this period. There are reasons, however, for doubting the completeness of coverage of these statistics. In the inter-censal period 1947-54, for instance, the completions as shown by the *Quarterly Bulletin* account for only slightly over 80 per cent of completions indicated by the census. It is claimed that improvements in the collection of building data have greatly reduced possible discrepancies since 1954, and there are possible differences in definitions between the two sets of data. Nevertheless, it is still unlikely that the coverage is complete. Certain types of dwellings are admittedly excluded. More important, the facts that the housebuilding industry by its nature is a scattered one, and that reliance is placed on a large number of local authorities as the basic sources of data, suggest that some understatement of building completions still continues. It has thus here been assumed that the official statistics are only 95 per cent complete and that in the period 1954-9 completions of houses and flats were in fact 405,000 units.

This excursion into the question of supply is necessary because projections of the type A and C (as indicated in Table IX) imply the existence of a backlog of demand. This backlog is measured by the difference between the occupancy ratios prevailing at the 1954 census and the desired long-term ones, applied to the population at that time. The arithmetic of this calculation yields a backlog at June 1954 of 271,000 units, to which might be added about one half of the 49,000 sheds, huts, tents, etc., that were included in the census population of dwellings. Now this total estimated backlog of 296,000 dwelling units at that date is obviously too high,[8] if only because the desired occupancy ratios, thought of as representing economic demand, are unlikely to be as high as those assumed in the calculation at least in the earlier part of the period surveyed. On the other hand projections B and D, which make no explicit use of the concept of a backlog, equally obviously assume desired occupancy ratios which are too low in 1959. That is to say, if they were the desired ratios, the increment in demand[9] from 1954 to 1959 that they imply, 382,000 units, was more than matched by the 405,000 increase in supply. That is further to say, there would have been no evidence of a housing shortage at 30 June 1959. This, it will be agreed, was clearly not the case.

This rather lengthy discussion has been necessary to establish two points. First, if the occupancy ratios assumed for 1974 are in fact those likely to be desired at that time, the increments of demand in projections A and C are too low throughout the period, but especially in the

8. For comparison the Department of National Development in *The Housing Situation*, Canberra, 1956, estimated the backlog to be 158,500 at June 1954.
9. Including, it must be remembered, replacement (Cf. Table IX).

years immediately after 1959, because of the existence of backlog demand. Secondly, the increments in projections B and D are also too low in the earlier period because desired occupancy ratios are higher than those assumed at that time. If, however, projections B and D are too low in the early years it follows that they are correspondingly too high in the later years. To put the point in another way: if projections B and D were to be altered in the light of these reflections, higher occupancy ratios would have to be assumed for 1959. Given the assumption that the 1974 ratios remain unchanged, this would mean that the increment arising from the increase in ratios between 1959 and 1974, i.e. 191,000 units on the present assumptions, would have to be reduced. Thus if the desired married occupancy ratio was 93 in 1959 rather than 91 as assumed, this would mean that the increment in demand between 1954 and 1959 was some 50,000 higher, which in turn would mean that the subsequent increment in demand from increasing occupancy ratios would be 50,000 less, i.e. 141,000. In general, the higher were desired occupancy ratios in 1959 and hence the more they approximated to those assumed for 1974, the greater will be the current backlog of demand and the closer will actual demand in the later years of the period approximate to the levels indicated by projections A or C.

The significance of this point should be quite clear. Even if demand in 1971-2 were 127,000 units (the annual average for 1969-74 in the highest projection, D) this only implies a 2·4 per cent annual average growth on the estimated 1959-60 output of 95,000 units. This is only slightly greater than the corresponding rate of growth of population. If, however, as seems not unlikely, the demand in 1971-2 should be 115,000 units (somewhat higher than the 109,000 annual average of projection C) the average annual rate of growth is only 1·6 per cent. The roaring sixties of popular discussion are most unlikely to be sustained by a rapidly expanding housebuilding industry.

It is now time to look at the shorter-term prospects. Unfortunately difficulties in estimating the outstanding backlog of demand in an economic sense make it hard to be at all precise. Thus if the backlog at June 1959 was 193,000 (i.e. 296,000 + 302,000 — 405,000) then the 1959-60 output of 95,000 dwellings could virtually be sustained throughout the sixties. If however, as has been estimated elsewhere, the backlog at June 1959 was of the order of 50,000 units,[10] then even if D, the highest of the projections, were accepted as measuring demand, the current level of supply could only be sustained until the first half of 1962. Supply would then have to fall to about 75,000 if it were simply to meet currently accruing demand. As it is likely that the backlog at June 1959 was of the order of 50,000 rather than 190,000, a substantial falling-off in housebuilding activity is to be expected before 1964.

This analysis clearly raises a number of important policy issues.

10. This, apparently, is the backlog at 30 June 1959 as estimated by the Department of National Development. Compare *The Australian Financial Review*, 12 November 1959, p. 1.

To consider first the long-term position. A rapidly expanding housebuilding industry tends to sustain a high level of investment generally. It does this directly, and indirectly also through its various derived demands on both manufacturing output and public works (roads, water and sewerage, etc.). To that extent our analysis suggests that there may be difficulty in maintaining sufficiently high levels of investment to sustain the hoped-for rates of growth in the economy through the 1960s. But the stimulus to demand resulting from recent levels of housebuilding has probably involved undue pressure on resources, and release from this pressure may be very welcome. In either case it is clear that some reorientation in thinking is necessary about the scale and character of investment, both public and private, over the next decade.

As to the more immediate prospects, since it is not possible to be specific about the timing of the likely decline in housebuilding, it is difficult to make many precise policy recommendations. One conclusion does, however, seem sufficiently firmly-based, even apart from its desirability in the current over-extended state of the economy. It is that it would be unwise to allow housebuilding activity to rise any higher than its present level. If it does continue to increase, the difficulties of later readjustment will be correspondingly greater. Similarly, non-house building should also be restrained, so that it will be in a better position to take up the expected slack from housing. Structural unemployment in the building industry would obviously be intensified if a down-turn in comercial and other building were to coincide with that expected in housing.

If it is assumed that general economic policy will be able to offset the depressing effects of a down-turn in housing activity, the problem, if any, will be one of structural unemployment—structural unemployment which, in the absence of remedial action, is not expected to persist for more than a year or so. What then appears to be required is very largely preparedness by the appropriate Commonwealth, State and local government authorities. This presumably would take the form of readiness (in terms of blue prints and administrative organization) to step up the rate of slum clearance and to increase the rate of educational and other forms of building activity. It must be remembered, however, that the expected downturn in housebuilding activity will coincide with a rapid increase in the domestic work-force. This increase, in the face of stagnant let alone declining activity in housebuilding, may make it difficult to avoid some increase in unemployment. If general unemployment should, even temporarily, occur, it may well be that the rate of immigration assumed in the preceding calculations would not be realized. This might ease the problem of absorbing the domestic increase in the work-force but it would also intensify the problems of readjustment within the building industry itself. Such a vision may of course be needlessly alarmist: only a limited section of the economy has been kept in view. Being warned beforehand is, however, probably the best means of ensuring that the glooomier pos-

sibilities are not realized and that, on the contrary, most is made of the opportunities provided by relief from the recent excessive pressures from demand for housing.

One final reflection, not connected with the immediate purpose of this paper, is worth noting. It is that, whatever the actual pattern of housing demand over the next fifteen years, housing will be much more sensitive to changes in monetary policy than it has been over the last decade or so. It is true that in the recent past the level of housing activity has been affected by changes in the availability of finance. But it has still been the case that monetary policy directed, say, towards correcting balance of payments disequilibria has not had to give special consideration to effects on the level of housing activity. More or less from now on, however, housing demand is not likely to be sustained by a large backlog, so that monetary pressures are likely to act much more directly on the level of housing activity. However, the implications of this changed situation lie outside the scope of this paper.

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SHORT-TERM FACTORS INFLUENCING NEW ZEALAND LAMB PRICES IN THE UNITED KINGDOM

As the sale of lamb in the United Kingdom is one of New Zealand's principal exports, it is important to ascertain both the long and short-term effects of factors influencing this market. Short-term factors only are considered here, i.e. those for which changes during one year may bring about price changes within that time. Various market factors which may be important in price determination have been considered from information obtained over the years 1956 to 1958 inclusive, and the results are applied to the 1959 year to date.

1. *Lamb Production and Storage*

The production of lambs in New Zealand results in a highly seasonal pattern of killing at the works, beginning in October, November, or early December in a late spring season. Table I shows the number of lambs killed over the 1955-58 seasons, the distribution of the number within any one year being approximately log-normal with slight departure owing to the tailing off of killings late into the year.

TABLE I

Lamb killings in New Zealand

(thousands)

	1955-56	1956-57	1957-58
October	86·7	81·5	30·0
November	1641·0	886·8	1257·3
December	2512·8	2442·6	2616·9
January	2991·3	3558·8	3675·0
February	2560·3	2340·3	1916·3
March	1664·6	1453·1	1463·4
April	1385·5	958·8	1670·6
May	1018·8	1325·9	1225·2
June	278·2	534·4	756·4
July	19·2	34·3	113·5
August		8·7	20·7
September			5·4

The period of 50 per cent kill is estimated at between the start of the season and January 31, with a standard deviation of eight days. Rapid killings over the peak of the season strain shipping and freight facilities so that large quantities of lamb are held in the works' stores. Monthly store holdings are shown in Table II.

It is not known how much use is made of N.Z. storage facilities in planning meat arrivals in the United Kingdom, although a tendency to ship early in the season put shipping space during the months December to March at a premium. Lamb arrivals in the U.K. occur at all principal ports, London taking approximately 70 per cent of

TABLE II

Export lamb held in N.Z. Stores

(thousand tons)

	1955-56	1956-57	1957-58
October	17·2	2·1	0·7
November	15·8	8·8	9·4
December	41·4	27·7	33·7
January	64·4	50·2	55·5
February	72·4	47·9	46·2
March	70·9	48·0	43·1
April	76·0	47·1	52·1
May	70·4	41·5	54·5
June	58·7	32·1	54·4
July	45·4	23·0	33·7
August	26·5	11·5	19·8
September	17·6	3·7	6·3

shipments. The lamb is stored upon arrival in private stores and in public government owned cold stores, from which it is released to the market at suitable times. Competition is keen at this stage and the state of the traders' private stores is not divulged. The only storage figures available relate to stocks held in storage space rented out by public corporations and the government.

TABLE III

Shipments of N.Z. lamb, by destination

(thousand tons)

Destination	Season: 1955-56	1956-57	1957-58
London	141·08	148·18	156·11
Liverpool	41·56	31·98	31·18
Avonmouth	14·82	12·31	18·60
Manchester	1·13	1·30	1·81
Glasgow	0·41	0·44	0·68
Hull	0·21	0·39	0·76
Cardiff	0·62	0·93	1·66
Southampton			3·18
U.K. Total	199·84	195·53	213·97
Other Countries	2·76	3·24	8·90
Total Lamb Exports	202·60	198·76	222·86

Open trading occurs at meat markets throughout the country, Smithfield in London handling the largest quantities. Prices are determined by bidding for "parcels" or lots of lamb placed on the market (or "pitched") for sale. Reported pitchings average 1000 tons per week and thus at Smithfield account for only 50,000 of the 150,000 tons that arrive annually. Most imported lamb is sold through extra-market channels. Prices quoted at Smithfield are, however, regarded as "ruling" prices for the trade, and reflect extra-market trading agreements. In view of the method of disposal, the exact amount of lamb sold in any one period cannot be accurately determined. Subsequent

to the arrival in early January of new season's New Zealand lamb, old stocks become obsolete, and since new season's lamb commands a premium, the desirability of quitting old stocks creates anomalous situations during this changeover period.

Figure 4 shows the average monthly price of New Zealand lamb at Smithfield during the years 1956-59. This paper seeks to explain seasonal price behaviour, and to indicate the principal factors concerned. (The absence of data over the months May-July 1958 is occasioned by a strike of meat transport operators.)

2. *Factors considered*

Some short-term factors likely to influence New Zealand lamb prices are as follows:

1. Pitchings of N.Z. lamb at Smithfield market.
2. Pitchings of U.K. mutton and lamb at Smithfield.
3. Smithfield fresh beef pitchings.
4. Other beef pitchings (frozen, chilled).
5. U.K. monthly total pork supplies. (000 tons)
6. U.K. total beef supplies. (000)
7. U.K. total mutton and lamb supplies. (000)
8. Average weekly arrivals of N.Z. lamb (per month).
9. Amounts of imported lamb held in public and government-owned cold stores.
10. Monthly U.K. mutton and lamb killings.

Data for the above variables are taken from the monthly *Intelligence Bulletin* of the Commonwealth Economic Committee (U.K.), *The Meat Producer and Exporter* issued by the Australian Meat Board, and *The New Zealand Meat Exporter,* the official organ of the N.Z. Meat Producers' Board. The correlation of N.Z. lamb price (in pence per lb.) with factors 1-7 is included in Table IV which shows the correlation of all pairs of the above factors.

Within each cell are the correlations for the years 1955 (top), 1956, 1957, and the first six months of 1958. The figures marked by asterisks denote the correlations over the whole period, and the figures occurring in cells corresponding to self-correlations refer to the standard deviations for each year and all years considered. Pitchings are taken weekly and the correlations are those based on 51 observations for 1955, 56 and 1957 and 20 observations (to the strike period) in 1958. Correlation coefficients required to establish the existence of a correlation significantly different from zero in each are given in the table.

No strict pattern is evident from the table although some points are noteworthy. The year to year changes in the sizes of the correlations between price and other variables indicate a lack of stability of dependence of price on the factors considered. This suggests that short-term factors may prevail within each season, giving rise to correlation on appropriate variables according to current conditions. More con-

TABLE IV

Correlations and Standard Deviations

N.Z. lamb price (P), Smithfield Market

Variable	P	1	2	3	4	5	6	7
P	131·5							
	175·9							
	133·1							
	194·8							
	191·1*							
1	0·107	422·4						
	−0·464	262·9						
	0·188	258·9						
	−0·088	314·8						
	−0·099	191·4						
2	0·510	−0·383	220·6					
	0·588	−0·432	198·3					
	−0·183	−0·206	191·5					
	−0·092	−0·090	151·1					
	0·261*	−0·299*	195·6*					
3	0·455	−0·317	0·926	296·4				
	0·361	−0·305	0·785	261·6				
	0·016	−0·108	0·822	214·3				
	−0·269	0·091	0·931	258·4				
	0·179*	−0·181*	0·767*	285·1*				
4	0·364	0·196	0·577	0·451	630·4			
	−0·038	0·149	0·305	0·380	559·9			
	0·124	0·499	0·135	0·724	685·9			
	−0·097	0·551	0·686	0·783	562·8			
	0·066*	0·241*	0·282*	0·477*	591·6*			
5	0·171	−0·497	0·659	0·720	0·144	4·812		
	0·358	−0·640	0·363	0·485	−0·554	7·542		
	−0·419	−0·438	0·444	0·351	−0·034	6·964		
	0·079	−0·215	0·766	0·647	0·514	3·075		
	−0·065*	−0·448*	0·405*	0·360*	0·088*	6·467*		
6	0·600	−0·364	0·855	0·830	0·364	0·774	1·738	
	0·309	−0·576	0·720	0·599	0·013	0·446	1·245	
	−0·156	−0·269	0·403	0·429	−0·109	0·165	1·233	
	0·446	−0·264	−0·103	−0·295	−0·400	0·410	0·746	
	0·108*	−0·420*	0·468*	0·420*	0·173*	0·443*	1·451*	
7	0·149	−0·370	0·390	0·434	0·035	0·790	0·604	8·693
	−0·193	−0·075	0·010	0·013	0·090	0·056	0·391	7·932
	−0·099	0·299	−0·535	−0·442	−0·082	−0·478	0·086	8·426
	−0·288	−0·155	0·604	0·656	0·230	0·191	0·068	5·389
	−0·139*	−0·052*	−0·586*	0·011*	0·013*	−0·002*	0·301*	7·935*

Differences from zero required for significance	Probability level	
	5%	1%
1955–56–57	0·273	0·254
1958	0·444	0·561
All years	0·148	0·195

sistent correlations hold for U.K. and N.Z. lamb pitchings, and N.Z. lamb pitchings and U.K. pork supplies. This reflects the fact that N.Z. lamb is sold in the U.K. lamb off-season, and indicates the tendency for pork to replace lamb. The absence of stable correlations suggests the dominance of other short-term factors.

Consideration of factors 8, 9 and 10 reveals strong influences upon lamb prices as indicated by the correlations in Table V.

TABLE V

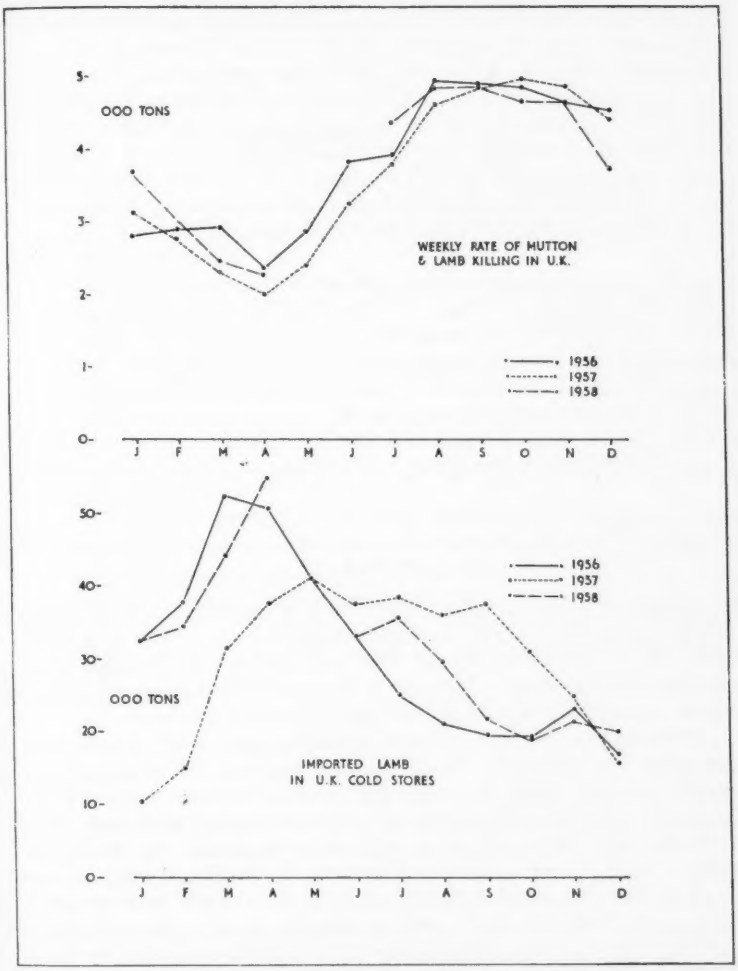
Correlations between price, rate of arrival, stocks in store, and home killings

	P	T	A	S_{-1}	S
P		0·6825	—0·5243	—0·9279	—0·8071
		—0·3410	0·0636	—0·1758	—0·1811
		0·8079	—0·9381	—0·8721	—0·8917
T			—0·4658	—0·7716	—0·8975
			—0·6863	0·4368	0·0500
			—0·7042	—0·5852	—0·8523
A				0·4469	0·7512
				—0·3757	0·1629
				0·7972	0·8359
S_{-1}					0·8199
					0·7961
					0·8667

P = average price of N.Z. lamb (29/36 lb.) per month in pence per lb.
T = average weekly U.K. killing rate (000 tons) of mutton and lamb over the month a year earlier and the year previous to this.
S_{-1} = total imported lamb in public cold stores (000 tons) at the end of the previous month.
S = total imported lamb in public cold stores (000 tons) during the current month.
A = average weekly arrival rate per month of N.Z. lamb in the U.K.

Each cell refers to the correlation for 1956 (top), 1957 (middle) and 1958. As this investigation was started early in 1958, Table IV involves only the first half year of 1958. Table V, however, was computed early in 1959 and this enabled the whole of 1958 to be included. Prices are highly correlated with all the above factors except in the year 1957. Figure 4 shows that price behaviour over this year differed from patterns in 1956 and 1958. Figures 1, 2, and 3 show the variation of the above factors over the years in question.

The parallelism between movements in the prices in Figure 4 and average weekly killings of mutton and lamb in the U.K. is at once obvious, and apart from the year 1957 the high correlations between these factors would indicate that periods of high home killings and high availability of fresh lamb tend to be accompanied by high prices for N.Z. lamb. Certainly those data do not support the opposing view that in normal spring seasons in the U.K. fresh lamb on the market depresses N.Z. lamb prices. From this evidence the tendency to explain price fluctuations for N.Z. lamb by the U.K. lambing season is under-


000 TONS
WEEKLY RATE OF MUTTON & LAMB KILLING IN U.K.
1956
1957
1958
J F M A M J J A S O N D
000 TONS
IMPORTED LAMB IN U.K. COLD STORES
1956
1957
1958
J F M A M J J A S O N D

Figures 1 and 2

standable. Indeed, but for the early months of 1957, explanation of N.Z. prices by only a seasonal effect would prove reasonably effective. But early 1957, showing as it does no inclination to follow the seasonal pattern discounts this theory rather heavily. The years 1956 and 1958 show all factors to be closely related to price levels with the factors operating along generally expected lines.

Prices rise when arrivals decrease and stores become lower, and also with the seasonal increase in home kill. In 1957, however, the pattern was so changed as to reverse this situation, indicating that the

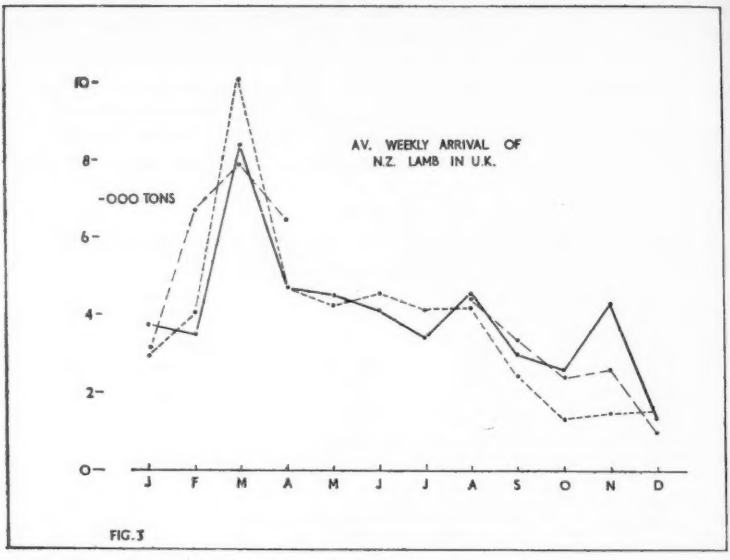


Figure 3

dependence of price levels on the home kill is less than on other factors such as storage. The storage and arrival position in early 1957 is interesting when compared with the 1956 and 1958 years. The cold store position of imported lamb is shown in Figure 2 and the average weekly arrival rate of N.Z. lamb into the U.K. is given in Figure 3.

February to May 1957 shows a definite decline in stores compared with other years, the figure being low in December 1956 and declining further over the period of customary increase. Arrivals to the United Kingdom maintained their level over this period but appeared insufficient for both sales and stock replenishment. Until the arrival of 40,000 tons in March and normal arrivals in April and May, stocks were low. The high correlations between cold store stocks, both unlagged and lagged (Table V) is the only correlation set that shows stability over the three years in question, the 1957 value being similar to those of 1956 and 1958. This evidence shows a tendency for there to be a general storage programme in the United Kingdom, and, in 1957, for the yearly programme to be maintained as closely as possible. Thus with the fall in stocks early in that year, attempts to restore the stock position and at the same time supply the market could well account for the different price trends.

3. *Models*

To obtain some measure of the actual dependence of price on the factors measured, various mathematical models have been fitted. In view of the diverse nature of lamb disposal, both from slaughterhouses to traders and from the traders to the wholesale market, the

prediction of price levels is difficult. Each trading concern in co-operation with its New Zealand suppliers endeavours in its own way to obtain reasonable market prices. Extra-market sales, planned programmes of meat selling, and the seasonal nature of lamb sales tend to complicate any predictive relations that may be put forward. Difficulties arise from the necessity of having adequate, but only just adequate, stores at the close of the year to carry over until new season's lamb arrives. Arrangements for marketing N.Z. lamb make it impossible to assess how much lamb is traded in any one period, and although this could be estimated, and is possibly important, it has not been considered here.

Better explanations of price fluctuations could perhaps be obtained by using estimates of amounts sold at various times, but predictions would only be as accurate as the estimates on which they are based. and these are subject to individual interpretation and possible bias. An endeavour has been made purposely to remove such interpretations in this paper as far as is possible by using only data which are recognized as being reasonably correct. For these reasons no estimates of unknown factors are attempted, nor are any such estimates used in the price prediction.

In testing the agreement between calculated and observed prices the variation about the average price over the period is taken as standard. The average price over 1956-58 was 25·51d./lb., this being the average of price quotations, and the variance is 3·595. The variance for the other models below has been computed and the smaller the variance so calculated the better the price prediction. The models tried were of the form

$$P_1 = \alpha + \beta\, Y_{11} + \delta\, Y_{21} + \zeta\, Y_{31} + \xi\, Y_{41}$$

where $Y_{11} \ldots . Y_{41}$ denote T,S,S_{-1} and A, the home kill, cold stores and arrival amounts respectively (see Table V). The high correlations exhibited in Table V between lamb price and these factors indicated that large reductions in variation would be likely. Table VI shows the values of the variations for each year and for all years. Fitting T_1 above, the equation

$$P_1 = \alpha_y + \beta\, T_1$$

(where α_y is a constant different for each year: 22·680 (1958), 24·768 (1957) and 22·225 (1956), and β (0·5996) the same for all years) results in a reduction of 1·380 in the all-years variation and 1·613, 0·787, 1·407 for 1958, 57 and 1956 respectively. The standard errors of the parameters are given in parenthesis beneath the parameter values in the equations.

The greatest reduction in variation for all years using only two variables occurs in the linear regression of lamb price in pence per lb. on N.Z. lamb arrival rate and the quantity of imported lamb held in cold store in the previous month (equation 8). The use of more than two variables in the prediction shows little improvement in the estimation. The reduction from 3·595 fitting the mean to 1·250 fitting equation 8 represents a reduction of 65·2 per cent. Considering each

TABLE VI

Forms of estimation and residual variances

Estimator	1956	1957	1958	All Years	
Average price 25·51d./lb.	2·874	3·457	4·318	3·595	
$P = \underset{22\cdot225\ (\cdot2631)}{\overset{22\cdot680}{24\cdot768+0\cdot5996T}}$	1·261	2·670	2·909	2·215	T
$P = \underset{25\cdot947\ (\cdot1223)}{\overset{26\cdot477}{28\cdot303-0\cdot3587A}}$	1·526	2·524	1·984	2·014	A
$P = \underset{27\cdot401\ (\cdot0605)}{\overset{27\cdot848}{29\cdot844-0\cdot0938S}}$	0·724	2·056	1·533	1·428	S
$P = \underset{27\cdot616\ (\cdot0691)}{\overset{27\cdot837}{29\cdot915-0\cdot0984S_{-1}}}$	0·338	2·249	2·222	1·541	S_{-1}
$P = \underset{24\cdot804\ (\cdot3333)\ (\cdot1583)}{\overset{25\cdot319}{27\cdot217+0\cdot2275T-0\cdot2892A}}$	0·985	2·404	1·314	2·050	TA
$P = \underset{26\cdot748\ (\cdot2573)\ (\cdot0233)}{\overset{27\cdot131}{29\cdot218+0\cdot1259T-0\cdot0883S}}$	0·669	2·187	1·519	1·452	TS
$P = \underset{25\cdot885\ (\cdot2192)\ (\cdot0218)}{\overset{26\cdot131}{28\cdot271-0\cdot0888T+0\cdot3749S_{-1}}}$	0·324	2·171	1·873	1·440	TS_{-1}
$P = \underset{28\cdot391\ (\cdot0978)\ (\cdot0200)}{\overset{28\cdot698}{30\cdot646-0\cdot2844A-0\cdot0866S_{-1}}}$	0·344	2·317	1·022	1·250	AS_{-1}
$P = \underset{27\cdot500\ (\cdot1238)\ (\cdot0230)}{\overset{27\cdot972}{29\cdot917-0\cdot1149A-0\cdot0820S}}$	0·906	2·171	1·144	1·435	AS
$P = \underset{26\cdot921\ (\cdot0320)\ (\cdot0353)}{\overset{27\cdot267}{29\cdot296-0\cdot0320S-0\cdot0453S_{-1}}}$	0·521	1·950	1·770	1·376	SS_{-1}
$P = \underset{28\cdot081}{\overset{28\cdot558}{30\cdot475-0\cdot1047T-0\cdot1382A-0\cdot0850S}}$	0·782	2·055	1·061	1·481	TAS
$P = \underset{28\cdot317}{\overset{28\cdot619}{30\cdot576+0\cdot0210T-0\cdot2770A-0\cdot0878S_{-1}}}$	0·328	2·320	1·008	1·243	TAS_{-1}
$P = \underset{26\cdot885}{\overset{27\cdot209}{29\cdot285+0\cdot1843T-0\cdot0453S-0\cdot0532S_{-1}}}$	0·320	2·164	1·801	1·389	TSS_{-1}
$P = \underset{28\cdot434}{\overset{28\cdot736}{30\cdot686-0\cdot2844A-0\cdot0885S_{-1}+0\cdot0005S}}$	0·355	2·168	1·020	1·266	ASS_{-1}
$P = \underset{28\cdot302}{\overset{28\cdot602}{30\cdot558+0\cdot0253T-0\cdot2805A-0\cdot0893S_{-1}+0\cdot0020S}}$	0·370	2·393	1·099	1·309	$TASS_{-1}$

year separately and comparing the residual variance with the variance about the mean of each year gives reductions of 88·0 per cent, 33.0 per cent, 76·3 per cent for 1956, 57 and 1958 respectively. As initial stocks are related to previous price through previous sales, the existence of high correlation between the residuals of equation 4 could result in the least square estimates being biassed. The calculated serial correlation of the first three orders resulted in the values 0·292, —0·102, and —0.066, none being significantly different at the 10 per cent level of probability. If we examine the closeness of agreement between observed price and price calculated from the equations by means of the variations in Table VI, we find that in 1957 the dependence of monthly average price on stores in hand within the month (S) is high. It is exceeded only by the agreement between price calculated using the cold storage quantities in hand in the month and the month previous (S, S_{-1}). The effect of arrival rate (A) is small; when coupled with S and S_{-1} it produces a poorer explanation of the variance in lamb price because of the high intercorrelation existing between the dependent variables.

1956 and 1958 exhibit a similar pattern but differing from 1957. In both instances S_{-1} has a large effect in reducing variation whilst arrival rate (A) has a marked effect on both years. The general tendency over years 1956-1958 appears to have been a varying one, both 1956 and 1958 being dependent on the amount of lamb arriving per week and the amount in cold stores at the end of the previous month. This would indicate, what is perhaps generally to be expected, that the N.Z. lamb price at any one time depends to a large extent on the actual amounts of imported lamb available in the United Kingdom at the time. The 1957 price changes show that prices tended to follow arrival rate and stores in the month the price was quoted (A, S). The extremely low storage position in early 1957 and the desire to build up storage amounts would tend to have the effect on price shown in Table VI. That is, it would tend to accentuate immediate supplies rather than the previous month's storage position.

Figure 4 shows the agreement between observed average monthly price and the estimated price for the years 1956-1958; the equations are taken from Model 8 (Table VI). The 1959 price estimates were obtained from equation 8, the constant being calculated as the mean of the January and February constants necessary to give complete agreement with prices in these months.

4. *Policy suggestions*

It is possible to obtain, on certain definite assumptions, various mathematical models giving rise to selling schedules for N.Z. lamb in the United Kingdom using data from Table VI. Such schedules would indicate what quantities of lamb must be sold in any specified month (taking into account the store position, arrivals, etc.) so that the total value of the annual kill is maximized. As no one agency has control over stores and sales, the marketing being competitive within itself

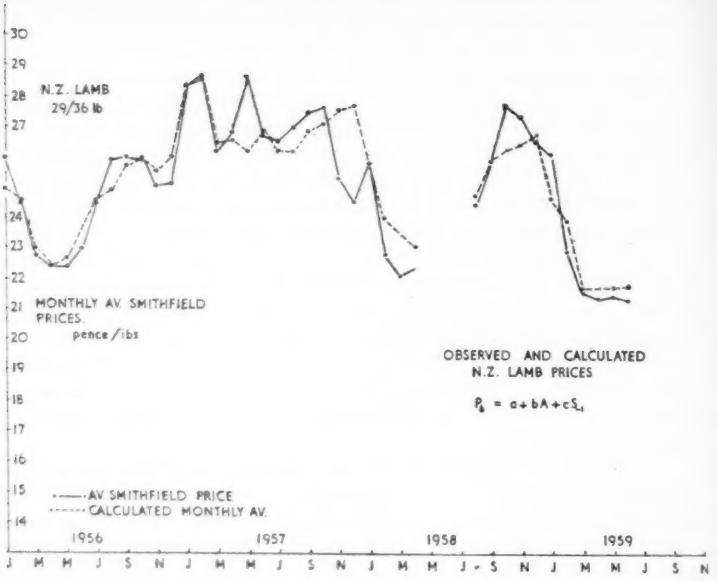


FIG. 4

Figure 4

between the different trading organizations, any tables so produced would be of little practical significance as instructions for sale of the requisite tonnage at specified times could not generally be complied with.

Lack of information concerning the actual amounts sold in the U.K. at specified times adds to the difficulty in establishing the demand for lamb and the degree to which such a demand is satisfied. It is generally recognized, however, that the market so far as imported lamb is concerned is reasonably saturated for most of the annual period.

The problem is essentially one of double storage and release, first within New Zealand itself (involving lamb slaughter, storage, and release for transport), and secondly in the United Kingdom (involving cold storage and release to the wholesale market). Market release is carried out by many traders, each pursuing his own policy with little or no co-ordination with his fellows. There is scope, however, for a New Zealand policy of so arranging shipping facilities as to maximize the potential value of U.K. stocks of imported lamb. The object of this would be to ensure at all times the most favourable climate for sales of imported lamb, of which New Zealand is the major supplier. Equation 8 of Table VI might be used in this connection to make an arrival programme for N.Z. lamb in the United Kingdom. For the i th month ($i = 1, 2, \ldots . 12.$) the value of known existing lamb stocks at ruling prices is given by

$$V_i = (\alpha + \beta A_i + \delta S_{i-1})(a_i + S_{i-1})$$

where a_i denotes the total N.Z. lamb ariving in the i th month and S_{i-1} the total imported lamb in cold stores at the end of the previous month. The first bracket indicates the price, α, β, and δ being the constants of equation 8 (Table VI). If c denotes the cost in pence per pound of storage in New Zealand for a period of one month, the figure also representing any loss in quality directly attributable to such storage, the total costs of all a_i in the season of twelve months may be written as

$$-\sum_{i=1}^{12} a_i (12 - i) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

The total of all potential values of stock over the year is then given by

$$R = \sum_{i=1}^{12} [V_i + a_i (12 - i)\, c] \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

Converting the a_i to A_i, $(a_i = kA_i)$ i.e. total monthly arrivals to average weekly arrivals per month, and maximizing (3) with respect to A_i gives

$$A_i = -\frac{1}{2\beta k}[\lambda + (\beta + \delta k)\, S_{i-1} + k\,(12 - i)\, c] \quad \ldots\ldots \quad (4)$$

λ being a constant. Equation 4 thus gives the weekly arrival rate for the month i necessary to maximize the current value of all stock held in the U.K. in this month. For example, suppose 200,000 tons of New Zealand lamb are to be sold in the twelve-month period January to December in the United Kingdom (corresponding to the lambing season in N.Z. lagged by shipping times), suppose average monthly stocks in cold stores in the U.K. over the year are to be 31,000 tons, then summing equation 4 over the twelve months gives $\lambda = 22{\cdot}778$ and hence

$$A_i = 9{\cdot}241 - 0{\cdot}2676\, S_{i-1} + 0{\cdot}5274\,(12 - i) \quad \ldots\ldots\ldots\ldots \quad (5)$$

where $k = 4{\cdot}333$, being the average number of weeks in a month, $\beta = -0{\cdot}2844$, $\delta = -0{\cdot}0866$ from Table VI, and $c = 0{\cdot}3$d/lb. per month. For $S_{i-1} = 31$

$$A_i = 9{\cdot}241 - 0{\cdot}527\,(12 - i) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (6)$$

and the average weekly arrival per month of N.Z. lamb when cold stores are at 31,000 tons varies between 912 and 6,709 tons depending on the month of the year ($i = 1, 2, 3, \ldots . 12.$). For each month, depending on the total cold store stocks at the close of the previous month and the month of the year, the amount of N.Z. lamb (in thousand tons) that should arrive in the United Kingdom to maintain the potential value of imported stocks can be calculated.

Using the values of S_{i-1} from Figure 2 for the years 1956, 57, 58, the average cold store monthly stocks of which are 30·9, 31·0, and 32·0 thousand tons respectively, the amounts of lamb that should have arrived each month to maximize U.K. stock values have been calculated and appear in Table VII.

TABLE VII

Arrival rates to maximize value of stocks in U.K. cold stores, and observed arrival rates

(thousand tons per week)

	1956		1957		1958	
	Maximizing	Observed	Maximizing	Observed	Maximizing	Observed
Jan.	8·16	3·84	10·55	3·08	8·90	3·19
Feb.	5·82	3·55	11·71	4·08	6·58	6·76
Mar.	3·82	8·35	9·95	10·15	5·44	7·85
Apr.	−0·59	4·71	4·98	4·69	2·31	6·47
May	−0·58	4·56	3·03	4·27	−1·05	..
Jun.	1·38	4·13	1·38	4·49	2·94	..
Jul.	2·97	3·45	1·84	4·18	3·81	..
Aug.	4·90	4·62	1·10	4·25	2·59	4·45
Sep.	5·12	3·02	1·08	2·53	3·61	3·37
Oct.	5·08	2·64	0·24	1·27	5·17	2·40
Nov.	4·68	4·30	1·37	1·47	5·50	2·65
Dec.	3·06	1·36	1·24	1·47	4·25	1·01

When considering Table VII it must be remembered that the values for a given month of any specified year refer to the desirable amount of lamb to arrive to maximize the value of total stores for that month, and do not thus collectively represent an arrival programme for the year. The actual amounts that did arrive at these times is also given. Thus in February 1957, the sales and arrivals in January resulted in 15·1 thousand tons in store at the end of the February month; then to ensure maximum potential value of stocks in store and arriving during March, 9,950 tons should arrive weekly during the month. Figures for April and May 1956 and May 1958, being negative, show that cold store stocks at these periods were already too great and no arrivals should occur at these times. Indeed, the reduction in stores by the figures quoted would have been necessary to maintain strictly the optimum condition.

General indications from Figures 2 and 3 and Table VII show that stocks in store tend to rise too rapidly during the months March-June, followed by continued heavy arrivals through to September. Although the above model undoubtedly simplifies the mechanism of arrival scheduling, possibly giving too much weight to prices and too little to storage costs, the need for increased econometric work in this field is made clear, especially as regards market scheduling and storage and release problems. Further, more comprehensive analysis to obtain true economic estimates of lamb sold in the United Kingdom and storage costs both within New Zealand and the U.K., while difficult, should not be impossible. Until such work is carried out no clear picture of lamb marketing and desirable selling and storage programmes will be apparent.

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NEWS AND NOTES

Thanks to the bequest of a former member of the Victorian Branch, the Economic Society of Australia and New Zealand has available £100 as prize for an essay competition. The essay should be in the general field of Australian or New Zealand applied economics, and should be between 5,000 and 15,000 words. The Society hopes to obtain entries which represent original applied economic research, and which either have been published or are in publishable form. *Entrants should be under 30 years of age on 31st March, 1962, the closing date of the competition.* Fuller details are available from the Secretary of the Victorian Branch.

The Victorian Branch of the Economic Society of Australia and New Zealand has produced this year the following short mimeographed Monographs: "The Commonwealth and the European Economic Community", by G. S. Browne; "Budgetary and Monetary Policy in Britain and Australia", by Dr. J. O. N. Perkins; "The Price of Electricity", by K. R. Graham; "Australia-Japanese Trade 1930–1959: An Historical Survey", by G. Moffatt. Copies of the last three are obtainable on request from the Secretary. In April 1960 the Branch conducted a Forum on Australian Transport in the Next Decade. The principal papers delivered were: J. P. Williams, "The Problems Facing Australian Shipping in the Next Decade"; L. A. Schumer, "Road Transport in the Next Decade"; E. H. Brownbill, "The Problems Facing Australian Rail Transport". Some copies of the last two papers are still available, and are obtainable from the Secretary.

BRANCH SECRETARIES

New South Wales: R. R. Clark, c/o The Mutual Life and Citizens' Assurance Co. Ltd., Box 1598, G.P.O.

Victoria: Mr. G. T. Bills, c/o Faculty of Economics and Commerce, University of Melbourne, Parkville, N.2, Victoria.

Queensland: C. P. Harris, Department of External Studies, University of Queensland, St. Lucia, Brisbane, S.W.6, Queensland.

South Australia: K. Hancock, Department of Economics, The University, Box 498D, G.P.O., Adelaide, South Australia.

Western Australia: Kenneth M. McKenna, c/o Treasury Department, Barrack Street, Perth, Western Australia.

Tasmania: D. E. Kirby, Box 665E, G.P.O., Hobart, Tasmania.

Canberra: J. G. Head, Department of Economics, School of General Studies, Australian National University, Canberra City, A.C.T.

Wellington: I. F. E. Wilson, c/o Bowden, Bass & Cox, Public Accountants, 328-330 Lambton Quary, Wellington, New Zealand.

Auckland: V. Argy, University of Auckland, P.O. Box 2175, Auckland, New Zealand.

Christchurch: N. L. McBeth, c/o "Press", The Square, Christchurch, New Zealand.

Capital Imports Into Sterling Countries. By A. R. CONAN. (Macmillan, London, 1960.) Pp. vii + 110. 29/9 Aust.

This book surveys the volume, character, and sources of the long-term capital that flowed into countries of the overseas sterling Commonwealth during the period 1948-1958. It does not attempt any rigorous analysis or theoretical development, but provides in a compact way much useful and interesting information about capital movements and as such should be of value to all those interested in this field. It is lucidly written, but suffers from a casual use of statistics which detracts from its value as a reference book, as does its lack of a statistical appendix.

The method of approach involves a summary statement of the published statistical data on capital inflow into the countries reviewed and an elucidation of the implications of the statistics. The difficulty in general and comparative use of such published data from a wide variety of sources is the lack of consistency in quality and meaning. Although the author recognizes this problem there are places in the book where variation in content and meaning seem to have destroyed the mutual consistency of some of the tables. (See, for example, the estimates of total capital inflow into Australia on pp. 39 and 52; and the estimates of the inflow into Australia from the U.K. on pp. 70 and 85, in conjunction with the table on p. 7.)

Such things are probably inevitable in this field of study, but there may be less justification for representing the relative contribution of cash, credit, and profits to the total inflow into some of the countries during the period by a single percentage figure for each type. On p. 51 re-invested profits are shown as contributing 33 per cent of the total inflow of direct investment into Australia during the period, but Australian governmenth publications show that as a percentage of the total inflow of direct investment into Australia in the years noted undistributed profits contributed approximately the proportions indicated:

1951/52	28%
1952/53	71%
1953/54	45%

To represent such a series by a single average figure at least obscures matter of interest and value.

The increasing relative importance of the U.S.A. as a source of capital is considered, together with the fact that this development has coincided with the decline of portfolio investment and the concentration of private capital flows into direct investment. That the foreign investments of the U.S.A. apparently earn higher rates of return than those of the U.K. is cited as a major disadvantage to the recipients of the capital inflow of this change in source.

Conan concludes that two aspects of capital flows need to be constantly reviewed. First, is external capital needed? Secondly, if needed, can it be found?

The answer to the second question is that there may be some shortage of capital willing to move overseas, particularly to certain areas, and that, as contrasted with pre-war when private investors supplied the funds, it is now necessary to use government-to-government loans and investment by public corporations and international financial institutions.

For an answer to the first question, a variation of which is also presented, do the advantages of capital inflow outweigh the disadvantages?, Conan relies on reference to and quotation from, the Report of the Royal Commission on Canada's Economic Prospects; the Royal Commission on Monetary, Banking and Credit Systems in New Zealand; and *1957 and Beyond, An Economic Survey* (Canberra). The answer is, therefore, in very general form, though certainly favourable to capital inflows; "The general conclusion which emerges from this summary of authoritative opinion in three different countries is that even for a relatively developed economy an inflow of foreign capital should, on balance, prove beneficial". Such a lack of precision and freshness may disappoint those already familiar with the sources and hopeful of something more in a book embodying the results of a serious research project.

A. R. G. PROWSE

University of Melbourne.

The Australian Trading Banks (2nd Ed.) By H. W. ARNDT. (F. W. Cheshire, Melbourne, 1960.) Pp. vi + 238. 30/- Aust.

Those familiar with the first edition of Professor Arndt's book will welcome this enlarged edition bringing his study up to date. It also incorporates (in a slightly revised form) his E.S. & A. Bank Research Lecture on *The Banks and the Capital Market.*

Each edition of this book has filled a noticeable gap in the literature on Australian financial institutions. One may admire, in particular, the fairness and clarity with which the author summarizes the often sharply conflicting views of the various parties to the many vexed issues associated with banking in Australia over the past three decades.

But he might surely have done rather more justice to the arguments that can be raised for a more forthright use of increases in interest rates in periods of inflation—a potentially useful control that has been so remarkably neglected in Australia (at least until each boom had more or less run its course) during the past decade. It is true that in the final sentence of the book he seems to become reconciled to the need to make a greater use of interest-rate policy, but in most places where he discusses the issue the balance of his argument seems to point the other way.

He acknowledges the undesirable increase in the public's liquidity that resulted from the commitment of the central bank to support the

bond market in periods of inflation. But he does not emphasize the thoroughly desirable reduction in the public's liquidity (and the useful check to speculation in shares and real estate) that could be brought about in a boom by a sharp rise in long-term rates. Nor does he point out that the stock argument in Australia about the need to protect the small saver from sharp falls in the market value of his bonds is even more questionable now that there are Special Bonds available to protect the small saver from this very risk.

Moreover, in discussing the way in which the central bank's powers to control demand have been weakened by the relative growth of non-bank credit, he does not give due weight to the extent to which the difficulties have been due to the central bank's hands remaining tied in the matter of interest-rate policy. The natural secular growth of non-bank credit can surely be allowed for in central bank policy; it is only in so far as that policy relies on the quantitative control over bank credit without adequate reinforcement from interest-rate policy that the central bank is likely to find its powers of control weakening as it tries to use them. Arndt acknowledges the extent to which the artificially low ceiling on bank fixed deposit rates has stimulated the growth of fixed interest securities issued by non-bank borrowers; but he gives the impression that the banks would be unwilling to raise their fixed deposit rates to a level at which they would be competitive. But, surely, if this was desirable from a national viewpoint, bank opposition (which would be highly unlikely if it was associated with a similar rise in overdraft rates) could be overcome. And, anyway, is not part of the trouble the fact that fixed-term bank deposits are much less competitive—at any given quoted rate—with outside borrowers than they would be under a system (such as that in Britain) of interest-bearing deposits subject to,say, seven days' notice?

Again, he does not point out that the artificially low level of bank overdraft rates, at a time when expectations of profit and therefore uncontrolled rates of interest are rising, acts as a stimulus to the demand for non-bank credit. A rise in overdraft rates may or may not choke off demand for bank accommodation; but it would certainly reduce the ability and willingness of firms to pay the higher rates for non-bank credit if their interest payments for a given level of overdrafts from their bank were higher. In short, in periods of inflation it is a vital pre-condition of a sound monetary policy that officially controlled interest rates should not be allowed to fall in real terms (that is, making due allowance for the annual rate of rise in the price level) to the very low levels they have reached in Australia during the past decade.

Readers of this book should, then, bear in mind that there are stronger arguments for a more flexible interest rate policy than those that Arndt recognizes. But in every other respect one can recommend the book wholeheartedly.

J. O. N. PERKINS

University of Melbourne.

Fiscal Policy in Underdeveloped Countries with Special Reference to India. By RAJA J. CHELLIAH. (George Allen & Unwin, London, 1960.) Pp. 168. 20/- stg.

Both the title of the book and the person of the author hold a promise of a revealing study of fiscal policy in underdeveloped countries. "Visiting experts" and other scholars have already made valuable contributions in this relatively recently discovered and highly controversial field. Presumably, one should look to the students of underdeveloped countries for the final diagnosis and cure of the apparently somewhat misunderstood ailments involved.

Dr. Chelliah gives a timely warning that an indiscriminate application of the Keynesian analysis of "western" economics to the distinctly different economic environment of underdeveloped countries is an obvious error in economic thinking. However, no sooner has the warning sounded than the author himself plunges headlong into the same trap. Thus, for instance, the Keynesian schedule of the propensity to consume is readily employed without any attempt at modifications. *Inter alia,* the effects on individual consumption of the extended family system and of undeveloped economic habits are largely ignored. Again the nature of the distribution and inequalities of incomes in underdeveloped countries is not adequately appreciated by the author. It is not surprising, therefore, that he hopefully advocates taxation as an effective corrective measure. Moreover, Dr. Chelliah's proposed tax reform in India is conspicuously reminiscent of fiscal measures advocated for industrial countries. Its main pillar is the personal income tax with a "built-in" scheme of partial exemption of savings, with indirect taxation to control consumption. The author hesitates to make a more substantial use of indirect taxation—the supreme form of taxation in underdeveloped countries; to him, so it appears, it is a *bête noire.*

The author's dramatic emphasis on the rapid rate of capital accumulation as the main key to development is amateurish. The extension of the existing and the provision of new economic and social overheads, particularly, education—the most essential components of a balanced growth in underdeveloped countries—are relegated by the author to a subordinate position. But the reader is told that an important prerequisite of economic development is "the existence of some groups or group of people . . . who have 'the will to economize', and who are anxious to work for material rewards" (p. 39). This is, to say the least, scholarly mysticism.

The reader is told that the central task of fiscal policy in underdeveloped countries is the mobilization of the "economic surplus" for purposes of economic development. He is also told that the concept is "tricky" and that the problem (apparently of the policy-maker) is to discover this surplus (p. 66). But this is about as far as the author is prepared to go. The reader is not likely to be convinced that the suggested scheme of taxation will effectively mobilize the "economic surplus".

While the conventional statistical data are supplied by the author, no attempt has been made to evaluate statistically the important relationships between economic variables which, as is argued by the author himself, so significantly distinguish the Indian economy from the "western" type.

In spite of the above criticism, the book is an interesting addition to the rapidly growing literature on the subject. At times it breaks fresh ground, and is original and stimulating. But in the opinion of the present reviewer it has not managed to rid itself of "western" influences both in the realm of analysis and in that of practical recommendations. In this respect the study is disappointing.

Z. M. KUBINSKI

University of New South Wales.

THE ECONOMIC WEEKLY

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The Problem of Linkage. Industrial Policy. What's in a Figure? Planning at the State Level. Allocation of Investments in the Third Plan. The Perspective of the Third Plan. Broad Outlines of the Third Plan.

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BOOKS RECEIVED*

A.—AUSTRALIAN AND NEW ZEALAND PUBLICATIONS

ARNDT, H. W. *The Australian Trading Banks* (2nd Ed.) (Cheshire, Melbourne, 1960.) Pp. 238. 30/- Aust.

AUSTRALIAN COUNCIL OF SALARIED AND PROFESSIONAL ASSOCIATIONS. *The Australian National Income and its Distribution—Report of a Seminar.* (Sydney, 1959.) Pp. 177. 12/6 Aust.

This volume records the proceedings at a Seminar held in Sydney early in 1959. The papers concentrate attention on the relative share of white collar workers in the Australian National Income. The problems of defining the "white collar worker" and arriving at a satisfactory quantitative assessment of the change in the relative standard of living of this group, are recognized. There is considerable discussion of methods for improving the bargaining power of the group in salary negotiations.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION (Ed. by Leeper, G. W.). *The Australian Environment* (3rd Ed.) (Melbourne University Press, Melbourne, 1960.) Pp. 151. 30/- Aust.

As this is the third edition of an established work comments will be made only on the changes. These are nearly all improvements, in expanding the material and correcting some of the slight errors of the earlier editions. Perhaps the least justifiable change is the substitution of a highly technical analysis of Vegetation, Ch. 6, for the earlier, more familiar and straightforward categories. This is in contrast to the rest of the revision, which is intended to strengthen the survey of the physical environment of Australia. The book is in an improved format, with larger coloured plates, and clearer photographs and maps.

GOLLAN, R. *Radical and Working Class Politics—A Study of Eastern Australia 1850-1910.* (Melbourne University Press, Melbourne, 1960.) Pp. 226. 35/- Aust.

MODELSKI, G. A. *Atomic Energy in the Communist Bloc.* (Melbourne University Press, 1959.) Pp. 226. 30/- Aust.

This is a study of non-military nuclear developments in the Soviet bloc. The author examines in detail the background of research, actual and projected applications, the resources available within the Soviet bloc for nuclear power development, as well as matters of administration. Co-operation between the U.S.S.R. and other Soviet bloc countries, and Soviet assistance programmes to countries outside the bloc, receive attention for their political as well as their economic aspects.

ZUBRZYCKI, JERZY. *Immigrants in Australia, A Demographic Survey Based Upon the 1954 Census.* (Melbourne University Press, 1960.) Pp. 118. 57/6 Aust.

ZUBRZYCKI, JERZY. *Immigrants in Australia, Statistical Supplement.* (Australian National University Social Science Monograph 18, Canberra, 1960.) Pp. 108. 30/- Aust.

B.—OTHER PUBLICATIONS

AITKEN, H. G., and Others. *The American Economic Impact on Canada.* (Duke University Press, Durham, N.C., 1959.) Pp. 176. Price 34/- stg.

This is a collection of seven papers delivered at a seminar of the Duke University Commonwealth-Studies Centre in 1958. They cover four main areas —the effects of American influence on Canadian economic policy, the repercussions of American farm policies on Canadian agriculture, the extent and effects of American investment in Canada, and the influence of American labour organizations and policies on Canadian labour.

ALLEN, R. L. *Soviet Economic Warfare.* (Public Affairs Press, Washington, 1960.) Pp. 293. $5.00.

This book is an attempt to provide an objective account of the East-West cold war in the economic sphere. It surveys Soviet economic and political motives and methods. Specific chapters deal with State Trading (Ch. 3), Commercial Policy (Ch. 7), Technical Assistance (Ch. 9), Participation in the United Nations Technical Assistance Programme (Ch. 10), and the Development of Economic Relationships with Asia, Middle East and Latin America (Chs. 12-14). Statistical tables are given in appendices to support some of the

* Acknowledgment of publications does not guarantee review.

generalizations made in the text. It is a helpful survey which collects available information on the development of Soviet participation in international trade.

ARNIM, VOLKMAR von. *Die Welttabakwirtschaft* (Kieler Studien 45) (Institut für Weltwirtschaft an der Universität Kiel, 1958.) Pp. 73. DM. 10.

A detailed and up-to-date survey of world production, consumption and trade of tobacco. It includes 37 statistical tables and is one of the Kiel Institute's many valuable economic surveys.

BAJPAI, O. P. *Elements of Life Insurance.* (Kitab Mahal, Allahabad, 1959.) Pp. 195. Rs. 5.00.

BREDO, W. *Industrial Estates—Tool for Industrialization.* (Free Press of Glencoe, Illinois, 1960.) Pp. 240. Price not stated.

CAVES, R. E. *Trade and Economic Structure—Models and Methods.* (Harvard University Press, Cambridge, Mass., 1960.) Pp. 317. $6.00.

CHATURVEDI, J. N. *Theory of Marketing in Underdeveloped Countries.* (Kitab Mahal, Allahabad, 1959.) Pp. 135. Rs. 7.50.

The author discusses the inapplicability of "Western" economics to the expansion of Indian agricultural production and marketing under the normal influences of variable demand and income in the industrial sector. The need arises to place post-harvest gluts in a comparable position to those in Western countries by eliminating the operations of the middleman.

CHELLIAH, RAJA J. *Fiscal Policy in Underdeveloped Countries—With Special Reference to India.* (Allen & Unwin, London, 1960.) Pp. 168. 20/- stg.

CLEGG, H. A. *A New Approach to Industrial Democracy.* (Basil Blackwell, Oxford.) Pp. 140. Price not stated.

In 1958 the Congress for Cultural Freedom organized a conference in Vienna on the subject of "Workers' Participation in Management". The organizers asked Mr. Clegg to write a book incorporating the material submitted to the conference.

The book is divided into three sections: I. An historical background; II. Post-War Developments in Britain, France, Germany, Yugoslavia and Israel III. Types of Industrial Democracy: Joint Consultation, Workers, Councils, Collective Bargaining, etc.

COMMITTEE ON ECONOMIC POLICY. *The Promise of Economic Growth.* (Chamber of Commerce of the United States of America, Washington D.C., 1960.) Pp. 53. $1.00.

CONAN, A. R. *Capital Imports into Sterling Countries.* (Macmillan, London, 1960.) Pp. 110. 29/9 Aust.

COUNCIL FOR MIDDLE EASTERN AFFAIRS, INC. *Middle Eastern Affairs, Vol. X, No. 12A Dec. 1959.* (New York.) Pp. 416. Sub. $5.00 a year.

DEANE, P. (Ed.). *Bibliography on Income and Wealth Series VII.* (Bowes & Bowes, London, 1960.) Pp. 131. 37/6 stg.

The bibliography contains annotated references to material published during 1955 and 1956 in more than fifty countries on the subjects of interest to the International Association for Research in Income and Wealth. The subjects include social accounting, international comparisons of income and wealth, input-output studies, and related topics of measurement or analysis.

DEBRU, G. *Theory of Value: An Axtomatic Analysis of Economic Equilibrium (Cowles Commission Monograph 17).* (John Wiley, New York, 1959.) Pp. 114. $4.75.

Recent development of Games Theory techniques has inevitably led to a re-examination of general equilibrium; Professor Debru gives the first concise and comprehensive restatament of the Walrasian model as a *n*-person game. It brilliantly establishes the equilibrium relative to a price system of the optimum in a free economy. It is essentially mathematical, but its preparatory study of set theory is excellent. A full biography of related literature is provided.

DOBB, MAURICE. *An Essay on Economic Growth and Planning.* (Routledge and Kegan Paul, London, 1960.) Pp. 119. 15/- stg.

EDDING, FRIEDRICH. *Internationale Tendenzen in der Entwicklung der Ausgaben für Schulen und Hochschulen* (Kieler Studien 47). (Institut für Weltwirtschaft an der Universität Kiel, 1958.) Pp. 164 + Statistical Appendix pp. 156. DM. 20.

This important piece of research contains details of public educational expenditure, over varying lengthy historical periods for Germany, France, Japan, Canada, Netherlands, Sweden, Switzerland, the Soviet Union, the United Kingdom and the United States. It provides international and intertemporal comparisons of different elements of educational expenditure, and of numbers

of students and teachers in various kinds of establishments. The limitations, sources and significance of the statistics are fully outlined. Certain tables also include a wider range of countries, and in one of these Australia figures. It would appear from this that public educational expenditure in Australia was 2·6 per cent of the national income in 1956 (2·3 per cent in 1953; 2·4 per cent in 1955) which was below that of all European countries listed, except Portugal. In Germany it has been around 3·5 per cent, in the Netherlands 4·5 per cent, in the United Kingdom 4·0 per cent and in Sweden 4·3 per cent. The author apparently found Australian educational statistics too difficult to include in his detailed analyses, but these figures suggest the need for some further enquiry, one which would have to take into account both public and private expenditures.

FOURASTIE, JEAN. *The Causes of Wealth.* (Free Press of Glencoe, Illinois, 1960.) Pp. 246. $5.00.

This book is a revised and elaborated version of the author's *Machinisme et Bien-Etre,* translated and edited by Theodore Caplow. It is a comprehensive explanation of economic progress, largely based on empirical data relating to the influence of scientific progress on production and on the distribution of labour. Professor Fourastié's work has already made a powerful impact on economic planners and teachers of economics on the Continent. Through this translation, and also through his contributions to recent O.E.E.C. publications, its healthy influence should be extended.

GRAHAM, B. *The Intelligent Investor.* (Harper, New York, 1959.) Pp. 292. $4.95. Empirical rules for the investor in the American stock market.

GREBLER, L. *Housing Issues in Economic Stabilization Policy.* (Occasional Paper 72.) (National Bureau of Economic Research, New York, 1960.) Pp. 129. $1.50.

This study of the housing credit policies pursued by the U.S. government and its agencies covers the period from 1953 to 1957. Particular attention is paid to possible connections between housing policies and general economic stabilization programmes, and the author has a number of interesting comments to make on the effectiveness of selective credit controls in the housing field as an anti-cyclical device.

GUNTHER, HERMANN-ERNST. *Die Marktregulierungen für Milch und Molkereiprodukte in Westeuropa.* (Kieler Studien 53.) (Institut für Weltwirtschaft an der Universität Kiel, 1960.) Pp. 172. DM. 14.

This study describes European production, consumption and trade in dairy products, the present systems of marketing operative in the six countries of the European Economic Community, in Great Britain, Austria, Switzerland, the four Scandinavian countries and Ireland, and future ways of regulating dairy product marketing in the light of European integration. It is shown that the protection given to milk producers and consumers is much greater in the Outer Seven countries than in the Inner Six. The study emphasizes the difficult task which the EEC has set itself in aiming to co-ordinate agricultural marketing policies in Europe.

HEINEKE, RICHARD. *Probleme der industriellen Gemüseverarbeitung.* (Kieler Studien 49.) (Institut für Weltwirtschaft an der Universität Kiel, 1958.) Pp. 140. DM. 12.

A survey of the vegetable canning and processing industry, including both economic and technical aspects. Particular attention is given to the relationship between the prices of fresh and processed vegetables, and the significance for Germany of the successful deep-freezing industry in Sweden.

HUGHES, T. J., and LUARD, D. E. *The Economic Development of Communist China 1949-1958.* (Oxford University Press Melbourne, 1959.) Pp. 223. 37/3 Aust.

INTERNATIONAL ECONOMIC ASSOCIATION. *International Economic Papers No. 8.* (Macmillan, London, 1958.) Pp. 240. 43/- stg.

The authors represented are Lundberg (on economic growth), Ferrara (the Physiocrats), Stackelberg (price discrimination), Bentzel Johansen, Schneider (all on aggregative statements and systems), Weber, Bye (both on international economic policy), Niehans (measures of firm size) and two "Iron Curtain" economists Janakieff (statistical measures) and Varga (money in a communist country).

KITAB, MAHAL. *Indian Economics Year Book 1959-60.* (Kitab Mahal, Allahabad, 1959.) Pp. 266. Price not stated.

KORNAI, J. *Overcentralization in Economic Administration.* (Oxford University Press, Melbourne, 1959.) Pp. 236. 57/- Aust.

This book, published early in 1957, is a contribution to a debate in Hungary

about methods of economic administration. It examines critically the plan instructions and incentives given to light industrial enterprises there in 1955 and 1956, illustrating the harmful effects of the excessive centralization of administration which prevailed at the time.

LEIBENSTEIN, H. *Economic Theory and Organizational Analysis.* (Harper, New York, 1960.) Pp. 349. $6.00.

A theory of organization is outlined at a high level of abstraction. The author then shows the influence of organizational structure within the firm upon the processes of decision making. Although organization occupies a central place in the book, there is only a loose connection between it and the chapters on static microeconomic theory and the growth of the firm. There are also some interesting comments on recent writings on the theory of oligopoly.

LIGGETT, D. R. *Small Industry Development Organizations. A World Directory.* (Free Press of Glencoe, Illinois, 1959.) Pp. 137. $4.50.

This is part of a programme of research into the problems and possibilities of "small industry", a subject of particular interest in some newly industrializing countries. It lists some 300 organizations in 78 countries engaged in "small industry" promotion and its object is to facilitate interchange of experience amongst countries. A brief description of each organization is given: its establishment, organization, activities and publications. The directory is prefaced by a short discussion of the meaning of "small industry" and the role of the "small industry" in economic development.

MICHAELIS, ALFRED. *Wirtschaftliche Entwicklungsprobleme des Mittleren Ostens.* (Kieler Studien 52.) (Institut für Weltwirtschaft an der Universität Kiel, 1960.) Pp. 170. DM. 14.

A thorough survey of problems of economic development in the Middle East, with two maps and 20 statistical tables. It discusses the state of industrialization, of agriculture, plans for irrigation and power development, and the place and prospects of petroleum in the economies of the various countries.

MOULTON, H. G. *Can Inflation be Controlled?* (Allen & Unwin, London, 1960.) Pp. 302. 21/- stg.

NAGPAL, B. D. *Illustrated Income-Tax Law.* (Kitab Mahal, Allahabad, 1959.) Pp. 380. Rs. 7.50.

NETHERLAND GOVERNMENT ECONOMIC INFORMATION SERVICE. *Holland's Economy — Statistical Portrait.* (Netherlands Govt. Printing Office, The Hague, 1960.) Pp. 143. Price not stated.

This volume describes the Dutch economy by means of diagrams, maps, graphs, bar-charts, ideographs, etc., and tables. The coverage ranges from geography, land, climate, religion, etc., to manufacturing, transport, commerce and national income and wealth.

PAL, B. N. *Principles of Agricultural Economics.* (Kitab Mahal, Allahabad, 1960.) Pp. 751. Rs. 18.00.

REVUE DE LA SOCIETE BELGE D'ÉTUDES & D'EXPANSION *No. 180 (mars-avril, 1958)* and *No. 186 (mai-juin-juillet, 1959.)* (Bruxelles.) Price not stated.

These two numbers of a Belgian review contain fifty-seven short articles on a variety of subjects. Dr. W. E. G. Salter writes on "The Expansion of the Australian labour force". He examines the origin of this expansion and discusses some of the economic problems which result from it. The Commonwealth Minister of Commerce contributes an article entitled "Australia offers favourable opportunities for investment". Other articles of interest are "The role of the towns in the African crisis" by Professor J. L. Comhaire of Seton Hall University, U.S.A.; "The irrationality of calculating depreciation and provisions based on the historical cost of fixed assets" by J. P. Goffin; and "The role of private capital in economic development" by the President of the International Finance Corporation.

RIVETT, K. *Economic Thought of Mahatma Gandhi.* (Allied Publishers, New Delhi, 1959.) Pp. 32. Rs. 1.00.

RIVISTA D'INFORMAZIONE E COMMENTO SUL COMMERCIO INTERNAZIONALE. POLITICA DEGLI SCAMBI—Anno 1—Numero 1—Gennaio-Febraio 1960. (Milan.)

SALTER, W. E. G. *Productivity and Technical Change.* (Cambridge University Press, London, 1960.) Pp. 198. 22/6 stg.

SAUL, S. B. *Studies in British Overseas Trade 1870-1914.* (Liverpool University Press, Liverpool, 1960.) Pp. 246. 35/- stg.

This collection of nine essays is divided into two sections. Part I consists of six essays which deal with the problems and patterns of the emerging

international economy between 1870 and 1914, and the central role played by Britain. Within this general theme the studies cover a variety of topics. Part II examines British trade with the Empire.

DE SAUVIGNY, G. de B. *Some Historical Clues to French Politics.* (Antioch Press, Ohio, 1958.) Pp. 29. 50c.

SHWADRAN, B. *The Middle East, Oil and the Great Powers* (2nd Ed.). (Council for Middle Eastern Affairs Press, New York, 1959.) Pp. 529. $7.00.

The history of oil concessions in the Middle East and the associated diplomatic activity on the part of Great Britain, Russia and the United States form the major part of this work. The economic impact of the immense oil wealth of the region is briefly described.

To anyone contemplating the diplomatic services as a career this book will indicate what might be required of him in a Middle East posting. It may possibly cause the prospective diplomat to turn to a more honourable occupation such as that of a bookmaker or marine store dealer.

SIXTH WORLD CONGRESS OF THE INTERNATIONAL CONFEDERATION OF FREE TRADE UNIONS. *Foreign Investment in Economically Underdeveloped Countries.* (I.C.F.T.U., Brussels, 1959.) Pp. 529. $7.00.

This pamphlet outlines the attitude of the International Confederation of Free Trade Unions to private and governmental investment in underdeveloped countries. It gives a short analysis of the pros and cons of private investment and advocates an increase in public investment, particularly through international agencies. There is an interesting appendix giving statistical details of foreign aid received and disbursed in various countries which may be helpful to students of the subject.

SRAFFA, P. *Production of Commodities by Means of Commodities, Prelude to a Critiave of Economic Theory.* (Cambridge University Press, Cambridge, 1960.) Pp. 98. 12/6 stg.

STEPANEK, J. E. *Small Industry Advisory Service—An International Study.* (Free Press of Glencoe, Illinois, 1960.) Pp. 193. $6.00.

This book is one of a number of monographs, both published and projected, on methods of small industry development. The present work is addressed mainly to those charged with the administration of economic development programmes, especially in the newly industrializing countries. It includes chapters on extension methods, information sources, organization and staffing of advisory service agencies and a survey of bodies operating in Asia, Europe, Latin America, Canada and the United States.

STUDY GROUP OF THE ROYAL INSTITUTE OF PUBLIC ADMINISTRATION. *Budgeting in Public Authorities.* (George Allen and Unwin, London, 1959.) Pp. 299. 28/- stg.

This is a study of the different kinds of budgets employed in the public sector of the British economy, with particular reference to the purposes they serve and the ways in which they are prepared and used in formulating policy and controlling financial activities. The discussion distinguishes between four groups of public authorities—the central government, local authorities, hospital services and the nationalized industries.

UNITED NATIONS (Economic Commission for Asia and the Far East). *Economic Survey of Asia and the Far East 1959.* (United Nations, Bangkok, 1960.) Pp. 169. 23/- stg.

UNITED NATIONS (Department of Economic and Social Affairs). *The Population of Asia and the Far East, 1950-1980.* (United Nations, New York, 1959.) Pp. 110. 10/6 stg.

These two publications are in a sense complementary, in that actual and projected levels of production may be measured against present and future population. The ECAFE review for 1959 lives up to its reputation as a comprehensive coverage, vitiated however by the critical absence of mainland China. The population report attempts estimates for China and the other regions, suggesting that the overall population increase will be 72 per cent between 1950 and 1980, with the most rapid rise in South-East Asia. In absolute terms these figures mean some 750 million more Asians in twenty years time. At present the rate of industrial development is outstripping population growth, but primary production is keeping pace only in some areas.

UNITED NATIONS (Economic Commission for Europe). *Economic Survey of Europe in 1959.* (Geneva, 1960.) Pp. 364. 21/- stg.

This is the 13th in this valuable series of annual reports. Trends in the European economy during 1959 are analyzed in Part I. Part II contains a

useful survey of the new long-term plans in the Soviet Union and Eastern Europe. In the section on more general questions there is a rather sketchy comparative analysis of the structure and short-run economic stabilizing potential of the public sector in the more highly developed economies of western Europe (Part III) and a discussion of the development problems of southern Europe and Ireland (Part IV).

UNITED NATIONS (Statistical Office). *A System of National Accounts and Supporting Tables.* (New York, 1960.) Pp. 45. 5/- stg.

This is a continuation of the work of a Committee of Experts of the Statistical Commission to provide a standard international system of national accounting. The earlier publication in this series (July 1953) has been revised in the light of the experience of governments and international organizations. The extension of the system to include flow of funds and input-output tables and later, national balance sheets is envisaged.

UNITED NATIONS. *Equal Pay for Equal Work.* (New York, 1960.) Pp. 65. 5/- stg.

WEINER, HERBERT E. *British Labor and Public Ownership.* (Public Affairs Press, Washington, 1960.) Pp. 111. $3.25.

In a little over 100 pages Herbert Weiner, formerly U.S. Labor Attaché in London, gives an extremely useful review of the role of nationalization in the policy and action of the British trade union movement over this century. Essentially he chronicles three phases—ideology, pragmatism, and reappraisal. Whether Labor will move into the final phase of disenchantment is doubtful, but this short account will help to explain its present dilemma.

WEISE, HERBERT. *Der deutsche Weinbau im Europäischen Markt.* (Kieler Studien 46.) (Institut für Weltwirtschaft an der Universität Kiel, 1958.) Pp. 71. DM. 10.

German viticulture in the European market. Germany produces only 1 per cent of the world's wine, but accounts for 31 per cent of world imports. The German wine industry is protected both by tariffs and by import restrictions. Tariffs are approximately 100 per cent *ad valorem*, while the author of this study estimates that quotas raise the internal price by another 100 per cent, so that the price to the German buyer is three times the price at the border. Clearly the establishment of the European Economic Community will present adjustment problems for this industry, and indeed from this study it is not difficult to see why the general regime of free trade in the Community is not to apply to agriculture. The book is of particular interest as a case study of the effects of import licensing.

WHITTAKER, E. *Schools and Streams of Economic Thought.* (Rand McNally, Chicago, 1959.) Pp. 416. $6.50.

In the author's terms "this book is both a complement and a successor to his *History of Economic Ideas* published in 1940. It combines the chronological and ideological approaches to the history of economic thought. From its opening chapter "From the Ancient World to the Protestant Revolution" to the closing chapters, "Employment and Business Cycles" and "Association and Planning", the book presents a concise and lucid account of the changing streams of economic ideas. A short annoted bibliography is provided.

ZOLOTAS, X. (Governor of Bank of Greece). *Economic Development and Technical Education.* (Bank of Greece, Athens, 1960.) Pp. 60. Price not stated.

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